New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Technical Support, 11th Floor
625 Broadway, Albany, New York 12233-7020
Phone: (518) 402-9553 • **FAX:** (518) 402-9577
Website: www.dec.state.ny.us

Denise M. Sheehan
Acting Commissioner

MEMORANDUM

TO: James Malcolm, Project Manager, DER Remedial Bureau C
Robert Schick, NYSDEC - DER Remedial Bureau C
Gary Litwin, NYSDOH - DEHI Bureau of Environmental Exposure Investigation
James Burke, Regional Hazardous Waste Remediation Engineer, Region 7
Anthony Quartararo, NYSDEC - DEE Superfund and Voluntary Cleanup Bureau
Joseph Ryan, DEE Program Attorney, Region 9
Christina Dowd, NYSDEC - DFWMR Bureau of Habitat
Anne Hohenstein, NYSOSC
Susanne Wither, NYSDEC, Bureau of Technical Support

FROM: Kelly Lewandowski, NYSDEC - DER Bureau of Technical Support Kelly Lewandowski

SUBJECT: Brownfield Cleanup Program Application
Washington Street Former MGP Site, C704046

DATE: MAR 23 2005

The attached Brownfield Cleanup Program Application for remedial work at the subject site has been forwarded to you for your records and/or processing according to the established Brownfield Cleanup Program procedures. If you require additional copies or the complete series of the related application's attachments, please contact the project manager, James Malcolm at (518) 402-9669.

The Time and Activity Code for the subject site is: N800 (on-site)
N801 (off-site)

KAL/ca
Attachments

Distribution
Original (with all attachments) to:
James Malcolm, NYSDEC - DER Remedial Bureau C
Copy (with all attachments) to:
Gary Litwin, NYSDOH - DEHI Bureau of Environmental Exposure Investigation
Anne Hohenstein, NYSOSC
Robert Schick, NYSDEC, DER Remedial Bureau C
Susanne Wither, NYSDEC, BTS (electronic copy)
Copy (without attachments) to:
Joseph Ryan, DEE Program Attorney, Region 9, Buffalo
James Burke, NYSDEC Region 7
Anthony Quartararo, NYSDEC - DEE Superfund and Voluntary Cleanup Bureau
Christina Dowd, NYSDEC - DFWMR Bureau of Habitat
Mary Jane Peachey, NYSDEC, Region 7

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Technical Support, 11th Floor
625 Broadway, Albany, New York 12233-7020
Phone: (518) 402-9543 • **FAX:** (518) 402-9595
Website: www.dec.state.ny.us

Denise M. Sheehan
Acting
Commissioner

MAR 23 2005

Mr. Tracy L. Blazicek
New York State Electric & Gas Corp.
P. O. Box 5224
Binghamton, NY 13902-5224

Re: Brownfield Cleanup Application
Washington Street Former MGP Site
BCP #: C704046

Dear Mr. Blazicek:

The New York State Department of Environmental Conservation (Department) is in receipt of your application for participation in the Brownfield Cleanup Program (BCP) pursuant to ECL Section 27-1400 et seq. As you know, the BCP is a cooperative approach between the Department and lenders, developers, and current and prospective owners. The program fosters private-sector remediation of brownfields and reduces development pressures on "greenfields." We are pleased to advise you that your application has been determined to be complete.

Pursuant to ECL Section 27-1407(5), a thirty day comment period is to be commenced upon the Department's determination that an application is complete. During the comment period the Department will be evaluating the eligibility of the project and determine the status regarding this as soon as possible. The party seeking to participate in the BCP is required under the BCP to notify in writing the chief executive officer and zoning board of each county, city, town and village in which the proposed brownfield site is located, as well as residents of the site, the public water supplier which services the area, any person who has requested to be placed on the brownfield site contact list, and the administrator of any school or day care facility located adjacent to or near the site. Further, the Department will publish a similar notice in the Environmental Notice Bulletin.

In order to facilitate the notifications, the Department has prepared the enclosed Public Notice for you to utilize and the instructions for placing and mailing the notifications as well as the document repository location and contents. As the applicant you are responsible for making available a copy of the application and copies of all other related attached documents such as any assessment and investigation reports and/or investigation or remedial work plans. Also, you must use this Department-approved Public Notice form and cannot provide any other or additional information when fulfilling your obligation to provide a legal notice for the newspaper of the application and comment period. The enclosed form should be provided to a local newspaper servicing the area including the brownfield site for publication no later than March 30,2005. Additionally, all of the above-mentioned mailings should be completed no later than March 29,2005. To the extent that the mailings and publications are not

(3/21/(

completed in accordance with these time frames, the Department will extend the comment period for a period sufficient to comply with the required thirty day notice requirement running from the latest of the mailings or publication.

A certificate of mailing, on the enclosed form, is required to be submitted within three days of the mailing. Further, the proof of publication provided by the newspaper must be submitted within three days of your receipt of such document. These documents should be submitted to the Department's project manager at:

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7014
Attn: James Malcolm

The Department will make every effort to determine your eligibility and status under the BCP forty-five (45) days from the date of this letter. We look forward to working cooperatively with you to address the environmental conditions at the brownfield site and to return this property back to productive use.

Sincerely,

Kelly A Lewandowski

Kelly A. Lewandowski, P.E.
Chief
Site Control Section

KAL/ca
Enclosures

ec w/enclosures:
J. Malcolm
G. Litwin, NYSDOH
A. Quartararo
S. Wither
M. J. Peachey, Region 7
ec w/o enclosures:
S. Bolesky

Brownfield Cleanup Program
Public Notice Instructions

A. Instructions to Requestor[1]

Newspaper

1) The enclosed public notice must be published, without modification, in a local newspaper of general circulation that services the area that includes the site no later than the date specified in the Division of Environmental Remediation's (DER) cover letter. The notice must be located prominently in the community bulletin section or comparable local section of the newspaper. The notice must be published in English and in any other language spoken by a significant number of people within the site community.

2) A proof of publication of the newspaper notice must be submitted to DER by the date specified in the DER cover letter.

Site Contact List

I) The enclosed public notice must be mailed, without modification, to the parties on the Site Contact List included with the application. The mailing must be performed by the date specified in the DER cover letter. No other materials can be mailed with this notice.

2) A certificate of mailing must be completed and submitted to DER by the date specified in the DER cover letter. (See enclosed certificate of mailing form)

Repository

I) Application package (application and appropriate documents) must be put in the site document repository specified in the public notice prior to the start of the public comment period.

B. Requestor's Instructions to Newspapers Regarding Printing the Public Notice

The enclosed public notice announces the receipt of a complete Brownfield Cleanup Program application package by the New York State Department of Environmental Conservation. Pursuant to ECL Section 27-1407(5), the public notice must be located prominently in the community bulletin section or similar local section of the newspaper. The public notice must be published by the date specified-

C. Requestor's Instructions to Parties on the Site Contact List Receiving the Public Notice

The enclosed public notice announces the receipt of a complete Brownfield Cleanup Program application package by the New York State Department of Environmental Conservation. Pursuant to ECL Section 27-1407(5), a public notice announcing the receipt of an application must be sent to parties on the Site Contact List. Please read the enclosed public notice and review the application package in the site document repository for further information.

[1] A requestor is a person who has submitted an application to participate in the BCP whose eligibility has **not** yet been determined by the Department of Environmental Conservation.

PUBLIC NOTICE

BROWNFIELD CLEANUP PROGRAM

Site Name: Washington Street Former MGP Site
Site Address: 25 Washington Street
Binghamton, NY 13901
County: Broome
Site No.: C704046
Requestor: New York State Electric & Gas Corporation

The New York State Department of Environmental Conservation (NYSDEC) administers the Brownfield Cleanup Program (BCP) pursuant to State Environmental Conservation Law (ECL) 27-1400 et seq. The BCP was created to encourage the remediation and redevelopment of contaminated properties known as brownfields. The requestor indicated above has submitted a BCP application for investigation of the site indicated above.

NYSDEC will accept public comments concerning the application. **A** copy of the application and other appropriate documents (application package) is available in the site document repository located at the address indicated below.

NYSDEC will review the application package and public comments received and then make a determination on the eligibility of the application.

Comments should be submitted by April 29, 2005.

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7014
Attention: James Malcolm

Repository address:
The Broome County Public Library
185 Court Street
Binghamton, NY 13901

(3/21/05)

Washington Street Former MGP Site
#C704046

CERTIFICATION OF MAILING

I certify that I mailed on ____________________________ a copy of the attached ___________________________ by first class mail upon the person(s) on the attached mailing list, by depositing a true copy thereof, securely enclosed in a postpaid wrapper, in the Post Office box at ____ in the City of ___________________________________, New York, which box is under the exclusive care and custody of the United States Post Office Department:

_________________________________ Signature

_________________________ Date

(3/21/05)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

BROWNFIELD CLEANUP PROGRAM (BCP) APPLICATION

ECL ARTICLE 27, TITLE 14

9/3/04

Applicant Information

NAME New York State Electric & Gas Corporation		
ADDRESS P.O. Box 5224		
CITY/TOWN Binghamton	ZIP CODE 13902-5774	
PHONE	FAX	E-MAIL
NAME OF APPLICANT'S REPRESENTATIVE Tracy L. Blazicek. CHHH		
ADDRESS Same as above		
CITY/TOWN	ZIP CODE	
PHONE 607-762-8839	FAX 607-762-8451	E-MAIL tlblazicek@nyseq.com

THE APPLICANT MUST CERTIFY THAT IT IS EITHER A PARTICIPANT OR VOLUNTEER IN ACCORDANCE WITH ECL § 27-1405 (1) BY CHECKING ONE OF THE BOXES BELOW:

☒ PARTICIPANT

An applicant who either 1) was the owner of the site at the time of the disposal of hazardous waste or discharge of petroleum or 2) is otherwise a person responsible for the contamination, unless the liability arises solely as a result of ownership, operation of, or involvement with the site subsequent to the disposal of hazardous waste or discharge of petroleum.

☐ VOLUNTEER

An applicant other than a participant, including an applicant whose liability arises solely as a result of ownership. operation of or involvement with the site subsequent to the disposal of hazardous waste or discharge of petroleum.

NOTE: By checking this box, the applicant certifies that helshe has exercised appropriate care with respect to the hazardous waste found at the facility by taking reasonable steps to: i) stop any continuing discharge; ii) prevent any threatened future release; and iii) prevent or limit human, environmental, or natural resource exposure to any previously released hazardous waste.

Applicant Relationship to Property (check one):

☐ Previous Owner ☐ Current Owner ☐ Potential /Future Purchaser ☒ Other corporate Successor to previous owner

Current Owner/Operator Information

OWNER'S NAME (if different from applicant) This application includes multiple parcels - See Attachment A		
ADDRESS		
CITY/TOWN	ZIP CODE	
PHONE	FAX	E-MAIL
OPERATOR'S NAME (if different from applicant)		
ADDRESS		
CITY/TOWN	ZIP CODE	
PHONE	FAX	E-MAIL

Site Information

SITE NAME Washinaton Street Former MGP Site

SITE ADDRESS 24 Water Street & 25 Washington Street CITY/TOWN Binghamton, NY ZIP CODE 13901

COUNTY Broome

SITE SIZE (ACRES) 0.39 acres approximately

LATITUDE (degrees/minutes/seconds) 42 ° 05 ' 41 "

LONGITUDE (degrees/minutes/seconds) 75 ° 54 ' 54 "

PLEASE ATTACH A COUNTY TAX MAP WITH IDENTIFIER NUMBERS, ALONG WITH ANY FIGURES NEEDED TO SHOW THE LOCATION AND BOUNDARIES OF THE SITE. ALSO INCLUDE A USGS 7.5 MINUTE QUAD MAP IN WHICH THE SITE IS LOCATED.

1. DO THE SITE BOUNDARIES CORRESPOND TO TAX MAP METES AND BOUNDS? ☐YES ☒NO
   IF NO, PLEASE ATTACH A METES AND BOUNDS DESCRIPTION OF THE SITE. See Attachment B
2. IS THE SITE PART OF A DESIGNATED BROWNFIELD OPPORTUNITY AREA PURSUANT TO GML970-R? IF YES, IDENTIFY AREA (NAME) ______________ ☐YES ☒NO
3. IS THE SITE PART OF A DESIGNATED EN-Zone PURSUANT TO TL § 21(b)(6)? FOR MORE INFORMATION GO TO: http://www.nylovesbiz.com/Productivity_Energy_and_Environment/BrownField_Redevelopment/default.asp ☒YES ☐NO

   IF YES, IDENTIFY AREA (NAME) Census Tract 001100: Criteria A & B

Applicant Eligibility Information (Please refer to ECL § 27-1407)

1. ARE ANY ENFORCEMENT ACTIONS PENDING AGAINST THE APPLICANT REGARDING THIS SITE? ☐YES ☒NO
2. IS THE APPLICANT SUBJECT TO AN OUTSTANDING CLAIM BY THE SPILL FUND FOR THIS SITE? ☐YES ☒NO
3. HAS THE APPLICANT VIOLATED ANY PROVISION OF ECL ARTICLE 27? ☐YES ☒NO
4. HAS THE APPLICANT BEEN PREVIOUSLY DENIED ENTRY TO THE BCP? ☐YES ☒NO
5. HAS THE APPLICANT COMMITTED A NEGLIGENT OR INTENTIONALLY TORTIOUS ACT REGARDING HAZARDOUS WASTE OR PETROLEUM? ☐YES ☒NO
6. HAS THE APPLICANT BEEN CONVICTED OF A CRIMINAL OFFENSE THAT INVOLVES A VIOLENT FELONY, FRAUD, BRIBERY, PERJURY, THEFT, OR OFFENSE AGAINST PUBLIC ADMINISTRATION? ☐YES ☒NO
7. HAS THE APPLICANT KNOWINGLY FALSIFIED STATEMENTS OR CONCEALED MATERIAL FACTS IN A MATTER RELATED TO THE DEPARTMENT? ☐YES ☒NO
8. HAS THE APPLICANT, BASED ON THE PROVISIONS OF ECL ARTICLE 27-1407 (OR A SIMILAR PROVISION OF FEDERAL OR STATE LAW), COMMITTED AN ACT OR FAILED TO ACT, AND SUCH ACT OR FAILURE TO ACT COULD BE THE BASIS FOR DENIAL OF A BCP APPLICATION? ☐YES ☒NO

Site Eligibility Information (Please refer to ECL § 27-1405)

1. DOES THE SITE MEET THE DEFINITION OF A BROWNFIELD SITE (REAL PROPERTY, THE REDEVELOPMENT OR REUSE OF WHICH MAY BE COMPLICATED BY THE PRESENCE OR POTENTIAL PRESENCE OF A HAZARDOUS WASTE, PETROLEUM, POLLUTANT, OR CONTAMINANT)? ☒YES ☐NO
2. IS THE SITE LISTED ON THE NATIONAL PRIORITIES LIST? ☐YES ☒NO
3. IS THE SITE LISTED ON THE NYS REGISTRY OF INACTIVE HAZARDOUS WASTE DISPOSAL SITES? ☐YES ☒NO
   IF YES, PLEASE PROVIDE: SITE #______________ CLASS # ______________
4. IS THE SITE SUBJECT TO A PERMIT CINDER ECL ARTICLE 27, TITLE 9, OTHER THAN AN INTERIM STATUS FACILITY? ☐YES ☒NO
5. IS THE SITE SUBJECT TO A CLEANUP ORDER UNDER NAVIGATION LAW ARTICLE 12 OR ECL ARTICLE 17 TITLE 10? ☐YES ☒NO
6. IS THE SITE SUBJECT TO A STATE OR FEDERAL ENFORCEMENT ACTION RELATED TO HAZARDOUS WASTE OR PETROLELIM? ☐YES ☒NO

Project Description

PLEASE ATTACH A DESCRIPTION OF THE PROJECT WHICH INCLUDES THE FOLLOWING COMPONENTS:

- PURPOSE AND SCOPE OF THE PROJECT
- ESTIMATED PROJECT SCHEDULE

See Attachment C

Site's Environmental History

TO THE EXTENT THAT EXISTING INFORMATION/STUDIES/REPORTS ARE AVAILABLE TO THE APPLICANT, PLEASE ATTACH THE FOLLOWING:

1. **ENVIRONMENTAL DATA**
   A PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT PREPARED IN ACCORDANCE WITH ASTM E 1527 (American Society for Testing and Materials: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process), AND ALL ENVIRONMENTAL REPORTS RELATED TO CONTAMINANTS ON OR EMANATING FROM THE SITE.
   IF A FINAL INVESTIGATION REPORT IS INCLUDED. INDICATE WHETHER IT MEETS THE REQUIREMENTS OF ECL ARTICLE 27-1415(2):
   ☐ YES ☐ NO **N/A**
2. **OWNERS**
   A LIST OF PREVIOUS OWNERS WITH NAMES, LAST KNOWN ADDRESSES AND TELEPHONE NUMBERS (DESCRIBE APPLICANT'S RELATIONSHIP, IF ANY. TO EACH PREVIOUS OWNER LISTED. IF NO RELATIONSHIP, PUT "NONE"). **See Attachment D**
3. **OPERATORS**
   A LIST OF PREVIOUS OPERATORS WITH NAMES, LAST KNOWN ADDRESSES AND TELEPHONE NUMBER (DESCRIBE APPLICANT'S RELATIONSHIP, IF ANY, TO EACH PREVIOUS OPERATOR LISTED IF NO RELATIONSHIP, PUT "NONE") **See Attachment D**

Contact List Information

PLEASE ATTACH, AT A MINIMUM. THE NAMES AND ADDRESSES OF THE FOLLOWING: **See Attachment E**

1. THE CHIEF EXECUTIVE OFFICER AND ZONING BOARD CHAIRPERSON OF EACH COUNTY, CITY, TOWN AND VILLAGE IN WHICH THE SITE IS LOCATED.
2. RESIDENTS, OWNERS, AND OCCUPANTS OF THE SITE AND PROPERTIES ADJACENT TO THE SITE. **See Attachment E-1**
3. LOCAL NEWS MEDIA FROM WHICH THE COMMUNITY TYPICALLY OBTAINS INFORMATION.
4. THE PUBLIC WATER SUPPLIER WHICH SERVICES THE AREA IN WHICH THE SITE IS LOCATED.
5. ANY PERSON WHO HAS REQUESTED TO BE PLACED ON THE SITE CONTACT LIST.
6. THE ADMINISTRATOR OF ANY SCHOOL OR DAY CARE FACILITY LOCATED ON OR NEAR THE SITE.
7. THE LOCATION OF A DOCUMENT REPOSITORY FOR THE PROJECT (E.G., LOCAL LIBRARY)

Contaminant Information

INDICATE KNOWN OR SUSPECTED CONTAMINANTS AND THE MEDIA WHICH ARE KNOWN OR SUSPECTED TO HAVE BEEN AFFECTED:

Contaminant Category	Soil	Groundwater	Surface Water	Sediment	Soil Gas
Petroleum					
Chlorinated Solvents					
Other VOCs	X	X			
SVOCs	X	X			
Metals	X	X			
Pesticides					
PCBs					
Other*	X	X			

*Please describe: **MGP purifier box waste**

Land Use Factors (Please refer to ECL § 27-1415(3))

Current Use: ☐ Residential ☒ Commercial ☐ Industrial ☐ Other____________________

Future Use: ☐ Residential ☒ Commercial ☐ Industrial ☐ Other____________________

Please check the appropriate boxes and provide an explanation as an attachment if appropriate.	Yes	No	Unknown
1. Do current historical and/or recent development patterns support the proposed use?	☒	☐	☐
2. Is the proposed use consistent with applicable zoning lawsimaps?	☒	☐	☐

3. Is the proposed use consistent with applicable brownfield opportunity area designations? (See GML 970-r)	☐		☐
4. Is the proposed use consistent with applicable comprehensive community master plans. local waterfront revitalization plans, other adopted land use plans?	☒	☐	☐
5. Are there any Environmental Justice Concerns? (See §27-1415(3)(p)).	☐	☒	☐
6. Are there any federal or State land use designations relating to this site?	☐	☒	☐
7. Do the population growth patterns and projections support the proposed use?	☒	☐	☐
8. Is the site accessible to existing infrastructure?	☒	☐	☐
9. Are there important cultural resources, including federal or state historic or heritage sites or Native American religious srtes proximate to the srte?	☐	☒	☐
10. Are there important federal, state or local natural resources, including waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species proxrmate to the site?	☒	☐	☐
11. Are there floodplains proximate to the site?	☐	☒	☐
12. Are there any institutional controls currently applicable to the site?	☐	☒	☐
13. Describe on attachment the proximity to real property currently used for residential use, and to urban, commercial, industrial, agricultural, and recreational areas. See Attachment F			
14. Describe on attachment the potential vulnerability of groundwater to contamination that might migrate from the site, including proximity to wellhead protection and groundwater recharge areas. S Attachment G			
15. Describe on attachment the geography and geology of the site. See Attachment H			
(Note: the 16th criteria relates to comments from the public, which would not be received at the time of application)			

Statement of Certification

(By applicant who is an individual)
I hereby affirm that information provided on this form and its attachments is true and complete to the best of my knowledge and belief. I am aware that any false statement made herein is punishable as a Class A misdemeanor pursuant to section 210.45 of the Penal Law.

Date: __________ Signature: ______________________________ Print Name: ________________________________

(By an applicant other than an individual)
I certify that I am Manager - SIR (title) of NYSEG (entity); that I am authorized by that entity to make this application; that this application was prepared by me or under my supervision and direction; and that information provided on this form and its attachments is true and complete to the best of my knowledge and belief. I am aware that any false statement made herein is punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Date: 2/24/05 Signature: Joseph M. Simone Print Name: Joseph M. Simone

SUBMITTAL INFORMATION:

Three (3) complete copies are required.

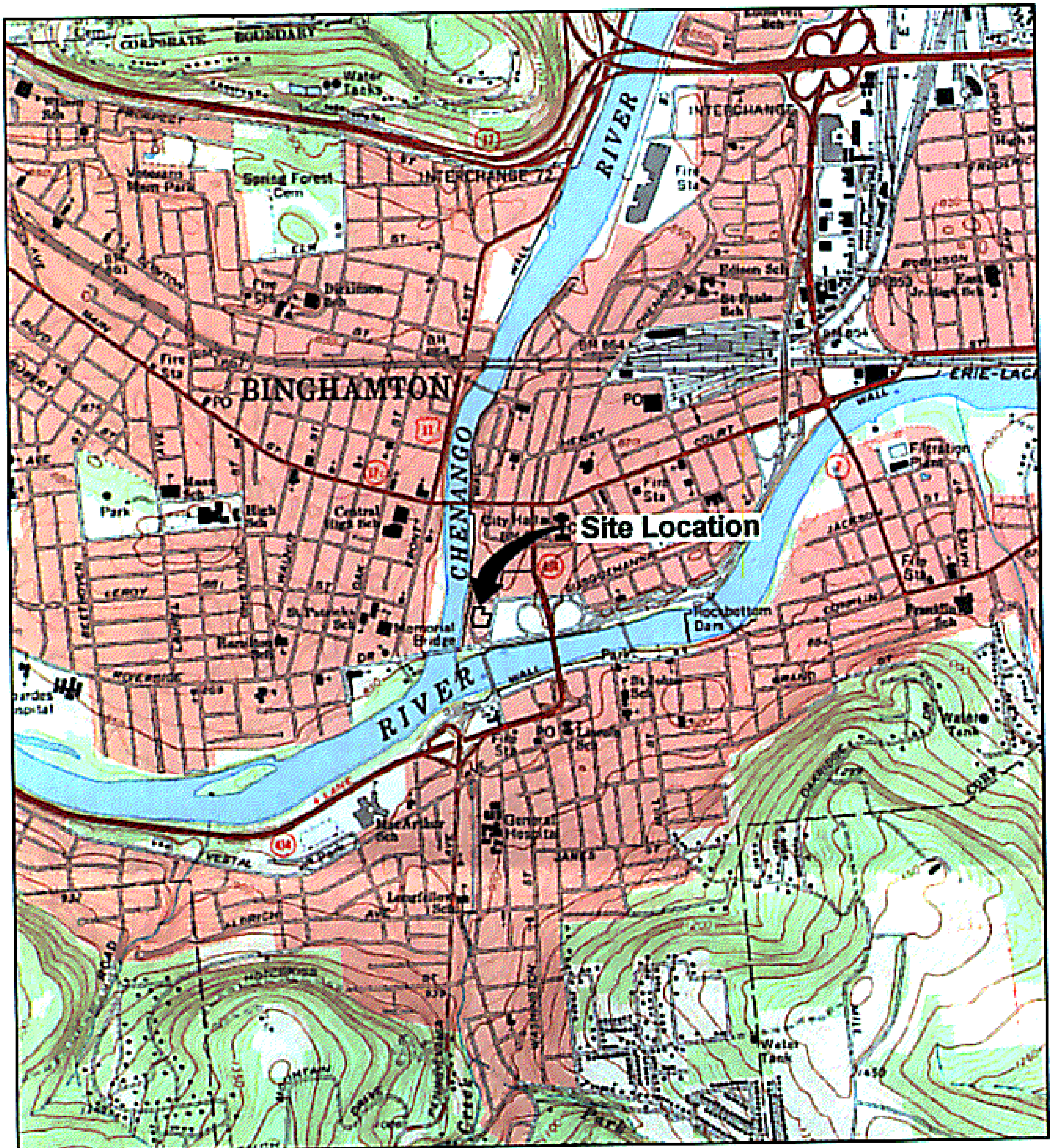
- **Two (2)** copies, one hard copy with original signatures and one electronic copy in Portable Document Format (PDF) on a CD or diskette, must be sent to:

  Chief, Site Control Section
  New York State Department of Environmental Conservation
  Division of Environmental Remediation
  625 Broadway
  Albany, NY 12233-7020

- **One (1)** hard copy must be sent to the DEC regional contact in the regional office covering the county in which the site is located. Please check our website for the address of our regional offices: http://www.dec.state.ny.us/website/der/index.html

FOR DEPARTMENT USE ONLY

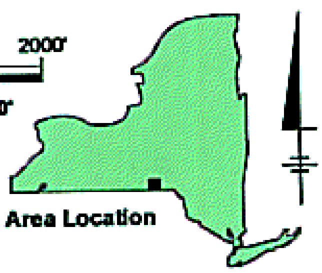
BCP SITE NO:_______________ **BCP SITE T&A CODE:**_______________ **PROJECT MANAGER:**________________________________



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., BINGHAMTON, NY, 1968, PHOTOINSPECTED 1976.

2000' 0 2000'

Approximate Scale: 1" = 2000'



Area Location

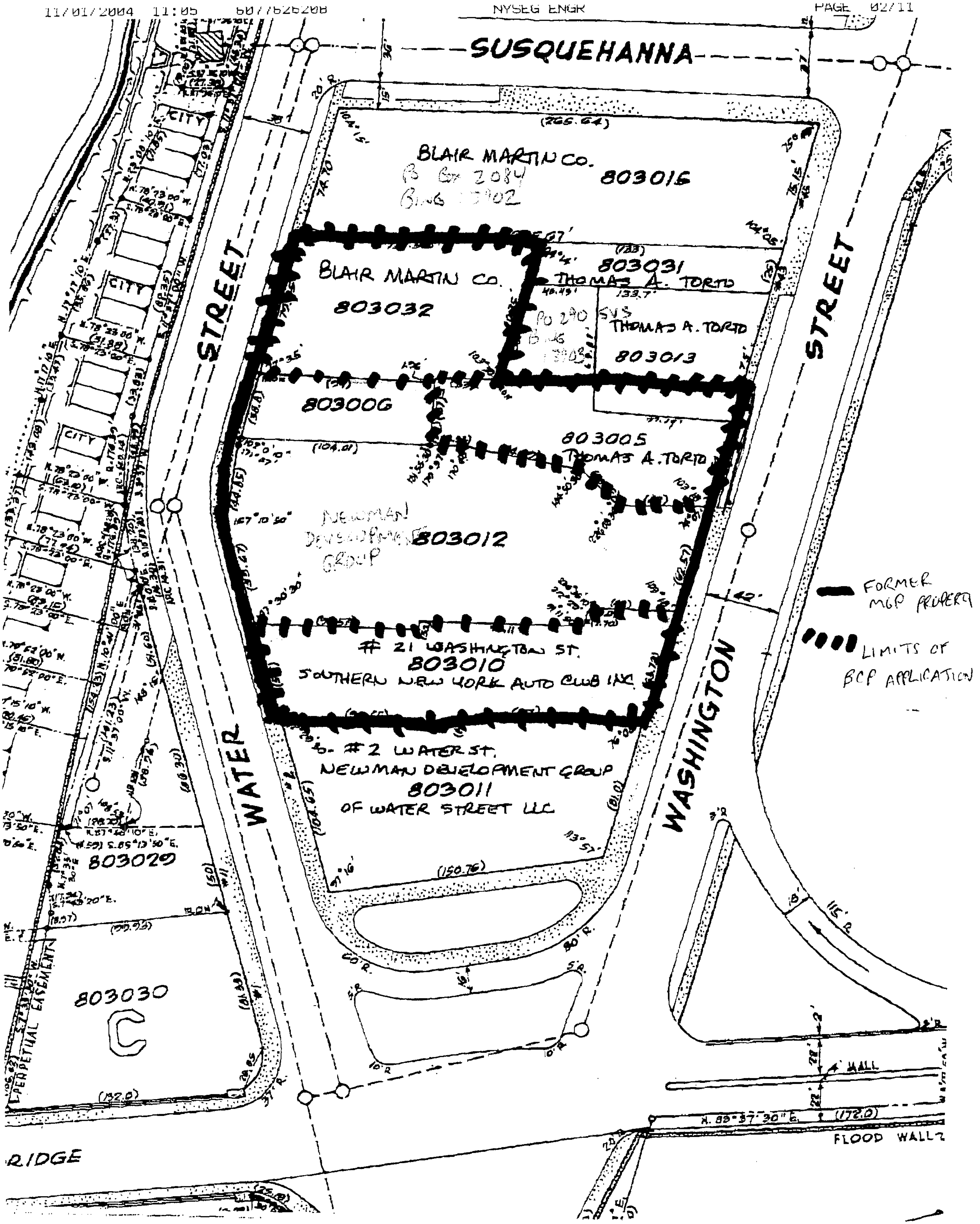
NEW YORK STATE ELECTRIC & GAS CORPORATION
BINGHAMTON FORMER MGP SITE
BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION

SITE LOCATION MAP

BBL
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

FIGURE 1

02/07/06 SYR-D85-DJH
13055002/13055n01.cdr


SUSQUEHANNA
WATER STREET
WASHINGTON STREET
BLAIR MARTIN CO.
803016
PO Box 2084
Bing 13902
BLAIR MARTIN CO.
803032
803031
THOMAS A. TORTO
PO 290 SVS
Bing 13903
THOMAS A. TORTO
803013
803006
803005
THOMAS A. TORTO
NEWMAN DEVELOPMENT GROUP
803012
21 WASHINGTON ST.
803010
SOUTHERN NEW YORK AUTO CLUB INC
2 WATER ST.
NEWMAN DEVELOPMENT GROUP
803011
OF WATER STREET LLC
CITY
CITY
CITY
803029
803030
C
PERPETUAL EASEMENT
WALL
FLOOD WALL
RIDGE
FORMER MGP PROPERTY
LIMITS OF BCP APPLICATION

ATTACHMENT A

Current Owner/Operator

Parcel 803005

Thomas A. Torto
PO Box 290, SVS
Binghamton, NY 13903

Parcel 803013

Thomas A. Torto
PO Box 290, SVS
Binghamton, NY 13903

Parcel 803032

Blair Martin, Co
PO Box 2084
Binghamton, NY 13902

Parcel 803010

Southern New York Auto Club, Inc.
21 Washington Street
Binghamton, NY 13901

Note that the former MGP site is currently comprised of all or part of six (6) separate parcels of land. NYSEG's Brownfield Cleanup Program (BCP) application is intended to include all or part of the four (4) parcels listed above. A separate BCP application will be filed by another party for the remaining two (2) parcels of the former MGP site (i.e. parcels 803012 and 803006).

ATTACHMENT B

Metes & Bounds Description

All of that tract or parcel of land described as follows:

Beginning at a point in the west line of Washington Street 29.9 feet southerly from the southeast corner of Lot No. 1 as laid down on a map of the Gas Company's Property recorded in Broome County Clerk's Office in Book of Maps No. 1 at page 181; running thence at an interior angle of 105° 53' with the west line of Washington Street a distance of 50.37 feet to a point; thence northwestwardly on a line making an interior angle of 133° 51' 30" a distance of 28.15 feet to a point; thence westwardly with an interior angle of 215" 09' 30" a distance of 64.89 feet to a point; thence westwardly on a line making an interior angle of 189° 12' a distance of 13.55 feet to a point; thence westwardly making an interior angle of 180° 03' a distance of 5.73 feet to a point; thence northwardly 35 feet, more or less, to a point; thence running westwardly a distance of 96.8 feet to a point in the west line of Water Street; thence running north along the easterly line of Water Street making an interior angle of 77" 40' a distance of 79.35 feet to a point. Said point being a distance of 74.70 feet, as measured along the easterly line of Water Street, from the south line of Susquehanna Street. Thence running eastwardly a distance of 131.5 feet, more or less, to a point; thence running southwardly making an interior angle of 75" 46', more or less, about 75 feet to a point; thence running eastwardly about 135 feet to the west line of Washington Street; thence running southwardly with an interior angle of 75° 51' along the west line of Washington Street a distance of 76.05 feet to the point or place of beginning;

As well as all of that tract or parcel of land described as follows:

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Binghamton, County of Broome and State of New York, bounded and described as follows: Being a lot known and designated as Lot No. Five (5), as said lot is laid down on a map of "Gas Property on Washington and Water Streets", which map was recorded in Broome County Clerk's Office in Book No. 1 of Maps at page 181. Said lot is situate on the east side of Water Street and is bounded on the west by said Water Street; on the south by the lands now or formerly of William F. Young; on the north by the lot designated as Lot No. Four (4) on said map; said lot hereby conveyed is fifty (50) feet front as measured on said Water Street, and is forty-eight (48) feet wide in the rear, and is ninety-five (95) feet deep on the south line, and about one hundred and eight (108) feet deep on the north line, be the said several dimensions more or less, and being a portion of the premises heretofore known as the Binghamton Gas Works Property.

EXCEPTING AND RESERVING THEREFROM, ALL THAT TRACT OR PARCEL OF LAND, situate in the City of Binghamton, County of Broome and State of New York, bounded and described as follows: Beginning at an iron set in the easterly line of Water Street at the northwesterly corner of lands heretofore conveyed by William

Pundis and wife to Crane Co. by deed dated November 30, 1928, and recorded in Book 382 of Deeds at page 512; thence easterly along the northerly line of the said lands conveyed to Crane Co. by William Pundis and wife, a distance of 92.19 feet to a point; thence southerly making an interior angle of 90° 00', a distance of 5.22 feet to a point; thence westwardly and parallel with the said northerly line of the said lands so conveyed to Crane Co. making an interior angle of 90° 00', a distance of 90.57 feet to a point in the easterly line of Water Street 5.47 feet southerly from the point or place of beginning; thence northwardly along the easterly line of Water Street making an interior angle of 107° 30' 30", a distance of 5.47 feet to the point or place of beginning, the last mentioned course making an interior angle of 72° 29' 30" with the first mentioned course. Being a strip of land along the north line of the parcel heretofore conveyed by William Pundis and wife to Crane Co. by deed dated November 30, 1928, and recorded in Book 382 of Deeds at page 512, and estimated to contain 477 square feet of land, be the same more or less.

ATTACHMENT C

Purpose and scope of the proiect:

Investigation and remediation to allow future restricted commercial use consistent with existing zoning and land use plans.

Schedule:

Submit BCP application and work plan: February 25, 2005

45-day comment period concludes: April 12, 2005

Initiate fieldwork exclusive of that within the footprint of Rexel building: May 2, 2005

Initiate fieldwork in footprint of former Rexel building (assumes NDG razes building immediately after Rexel vacates): October 15, 2005

Submit draft remedial investigation report to DEC: February 28, 2006

Site remediation: dependent on DEC review of draft RI report and Newman Development Group project needs.

ATTACHMENT D

Previous owners*

1856- 1887	Binghamton Gas Light Company
1887 – 1888	Binghamton Gas and Electric Co.
Pre-1918 - ?	Larrabee-Deyo Motor Truck Co., Inc.
11/1/27	Parcel 2 acquired by Charles E. Titchener (from Larrabee-Deyo)
5/22/29	Parcel 3 acquired by Charles E. Titchener (from Crane Co.)
12/22/53	Parcels 2 & 3 bequeathed by Charles E. Titchener to his estate
2/17/54	Parcel 1 acquired by Mary Evelyn Burton (from Blanche Keefe)
4/1/54	Parcels 2 & 3 acquired by AERR Co., Inc. (from Norman A. Boyd, Executor)
8/3/66	Parcel 1 acquired by Mary Evelyn Burton and Blanche Keefe (from Mary Evelyn Burton)
9/8/76	Parcel 1 acquired (from Mary Evelyn Burton) by Wehle Electric Co., Inc.
1/19/77	Parcels 2 & 3 combined (as AERR merges with Wehle Electric)
9/28/90	Parcels 1, 2, & 3 acquired by Westbourne Supply Inc., (from Wehle Electric) and combined
6/15/01	Parcels 1, 2, & 3 acquired by Southern Electric Supply Company, Inc. (from Westbourne Supply Inc.)
10/04	Parcels 1, 2, & 3 acquired by Washington Street Associates, LLC (from Southern Electric Supply Company, Inc.)

* Refer to the attached figure for a depiction of parcels 1, 2, & 3.

Previous Operators

Binghamton Gas Light Company 1885-1887

Binghamton Gas and Electric Co. 1887-1888

Larrabee-Deyo Motor Truck Co.	pre 1918- 1927
Crane Co.	?-1929 (Parcel 3)
AERR Co., Inc.	1954-1977 (Parcels 2 & 3)
Wehle Electric Co., Inc.	1976 (Parcel 1) , 1977-1990 (Parcels 2&3)
Westbourne Supply Inc.	1990-2001
Southern Electric Supply Co., Inc.	2001-current

ATTACHMENT E

Contact List Information

1. **Zoning Board Chairperson**

   City of Binghamton Zoning Board of Appeals
   Alex Roberts, Chairman
   38 Hawley Street
   Binghamton, NY 13901

   County CEO

   Barbara Fiala – County Executive
   PO Box 1766
   Binghamton, NY 13902-1766

   City CEO

   Richard Bucci – Mayor
   38 Hawley Street
   Binghamton, NY 13901

2. **Residents, Owners and Occupants of the Site and Adjacent Properties**
   See attachment E-1

3. **Local News Media**

Clear Channels Radio
320 Jensen Road
Vestal, New York 13850

FAX: 584-5900
Phone: 584-5800
Email: NewsChannel34@NewsChannel34.com
(no email address directly to newsroom)

Affiliated Radio Stations:

WMRV
WMXW
WKGB
WBBI
WENE
WINR

Citadel Radio
59 Court Street
Binghamton, New York 13901

FAX: 772-9806
Phone: 772-8850
Email: bernie@wnbf.com

Affiliated Radio Stations:

WAAL
WHWK
WWYL
WYOS
WNBF

Television Stations

WBGH/WIVT (NBC/ABC)
203 Ingraham Hill Road
Binghamton, NY 13903

FAX: 723-6403
Phone: 771-3434
Email: newschannel34@newschannel34.com

WBNG-WBXI (CBS)
560 Columbia Drive
Johnson City, New York 13790

FAX: 729-4022
Phone: 729-8812
Email: calkins@wbngtv.com

WICZ (Fox 40)
4600 Vestal Parkway E.
Vestal, New York 13850

FAX: 770-7550
Phone: 770-4040
Email: FOX40@wicz.com

WSKG (Channel 46)
501 Gates Road
Vestal, New York 13850

FAX: 729-7328
Phone: 729-0100
Email: mail@wskg.pbs.org

Newspapers

Press & Sun Bulletin
4421 Vestal Parkway East, Vestal, NY 13850
P.O. Box 1270
Vestal, NY 13902

FAX: 798-1113
Phone: 798-1234
Email: rock.er@pressconnects.com
jmicale@pressconnects.com
dschneier@pressconnects.com
lmiller@pressconnects.com
jplatsky@pressconnects.com

4. Water Supplier Serving the Area

City of Binghamton
Department of Public Works
Louis J. Kelly, Commissioner
38 Hawley Street
Binghamton, NY 13901

5. Name of Any Person Who Requested to be Placed on the Site Contact List

See attachment D-1

6. **Administrator of any school or day care facility located on or near the site.**

Not applicable – no schools or day care facility on or near the site.

7. Location of Document Repository for the Project

Broome County Public Library
185 Court Street
Binghamton, NY 13901

ATTACHMENT E-1

Mark P Callahan
or Current Resident
11 Water St.
Binghamton, NY 13901

Current Resident
1 Water St.
Binghamton, NY 13901

City of Binghamton
38 Hawley St.
Binghamton, NY 13901

Thomas A. Torto
P.O. Box 290 SVS
Binghamton, NY 13903

Current Resident
43 Washington St.
Binghamton, NY 13903

Blair Martin Co
P.O. Box 2084
Binghamton, NY 13902

Current Resident
40 Water St.
Binghamton, NY 13901

Current Resident
35 Washington St.
Binghamton, NY 13901

Southern Electric Supply
Company Inc.
PO Box 610026
Dallas, TX 75261

Current Resident
38 Water St.
Binghamton, NY 13901

Southern New York Auto Club Inc.
or Current Resident
21 Washington St.
Binghamton, NY 13901

Current Resident
21 Washington St.
Binghamton, NY 13901

Newman Development Group
of Water Street LLC
3101 Shippers Rd.
Vestal, NY 13850

Current Resident
2 Water St.
Binghamton, NY 13901

Current Resident
31 Washington St.
Binghamton, NY 13901

Current Resident
37 Washington St.
Binghamton, NY 13901

Current Resident
45 Washington St.
Binghamton, NY 13901

Woodburn Court Associates
P.O. Box 547
Jenkintown, PA 19046

Current Resident
21 Exchange St.
Binghamton, NY 13901

County of Broome
40 Hawley St.
Binghamton, NY 13901

Current Resident
60 Hawley St.
Binghamton, NY 13901

Broome County Young
Men's Christian Assoc.
61 Susquehanna St.
Binghamton, NY 13901

City of Binghamton
Claims Unit – Div -FISC
P.O. Box 2117
Albany, NY 12220

Current Resident
44 Hawley St.
Binghamton, NY 13901

City of Binghamton
or Current Resident
38 Hawley St.
Binghamton, NY 13901

Marianne King
203 Patio Dr.
Endwell, NY 13760

Current Resident
28 Isbell St.
Binghamton, NY 13901

Broome County Government
P.O. Box 1766
Binghamton, NY 13902

Current Resident
92 Court St.
Binghamton, NY 13901

Binghamton Housing Authority
45 Exchange St.
P.O. Box 19
Binghamton, NY 13901

Current Resident
25 Exchange St.
Binghamton, NY 13901

Current Resident
66 Hawley St.
Binghamton, NY 13901

YWCA
or Current Resident
74 Exchange St.
Binghamton, NY 13901

Current Resident
74 Hawley St.
Binghamton, NY 13901

19 Chenango Street Inc.
19 Chenango St.
Binghamton, NY 13901

Current Resident
84 Court St.
Binghamton, NY 13901

Michael J. Weber
or Current Resident
78 Court St.
Binghamton, NY 13901

L.L.C.
4164 Lisi Ln
Binghamton, NY 13903

Current Resident
80 Court St.
Binghamton, NY 13901

Current Resident
82 Court St.
Binghamton, NY 13901

City of Binghamton
38 Hawley St.
Binghamton, NY 13901

Current Resident
72 Court St.
Binghamton, NY 13901

Binghamton Associates, L.L.C.
1424 State St.
Sarasota FL 34236

Current Resident
92 State St.
Binghamton, NY 13901

Binghamton Urban
Renewal Agency
38 Hawley St.
Binghamton, NY 13901

Current Resident
90 State St.
Binghamton, NY 13901

Current Resident
88 State St.
Binghamton, NY 13901

Current Resident
86 State St.
Binghamton, NY 13901

Current Resident
82 State St.
Binghamton, NY 13901

City of Binghamton
Director of Finance
38 Hawley St.
Binghamton, NY 13901

Current Resident
69 Collier St.
Binghamton, NY 13901

Current Resident
80 State St.
Binghamton, NY 13901

Development L.L.C
15 West Main St.
Owego, NY 13827

Current Resident
60 Court St.
Binghamton, NY 13901

Arena Hotel Corp.
or Current Resident
2 Hawley St.
Binghamton, NY 13901

L.L.C
80 NE 168 St.
North Miami Beach, FL 33162

Current Resident
2 Court St.
Binghamton, NY 13901

William T. Mantas
or Current Resident
89 State St.
Binghamton, NY 13901

Stephens Square, L.L.C
520 Columbia Dr.
Johnson City, NY 13790

Current Resident
81 State St.
Binghamton, NY 13901

Bearcats Development
Group, L.L.C.
73-75 State St.
Binghamton, NY 13901

Current Resident
77 State St.
Binghamton, NY 13901

Frederick J. Meagher, Jr. &
Sherwood Walls
or Current Resident
15 Hawley St.
Binghamton, NY 13901

William E. & Patricia C. Tabeek
13 S. Willis Ave.
Endwell, NY 13760

Current Resident
114 Washington St.
Binghamton, NY 13901

The Garland, L.L.C.
or Current Resident
116 Washington St.
Binghamton, NY 13901

Mary Puglisi
33 Fayette St.
Binghamton, NY 13901

Current Resident
118 Washington St.
Binghamton, NY 13901

Eugene Beautz &
Robert W. Williams
120 Washington St.
Binghamton, NY 13901

Current Resident
122 Washington St.
Binghamton, NY 13901

City of Binghamton
38 Hawley St.
Binghamton, NY 13901

Current Resident
124 Washington St.
Binghamton, NY 13901

Margaret M. Martin
884 Powderhouse Rd.
Binghamton, NY 13903

Current Resident
128 Washington St.
Binghamton, NY 13901

Eugene Beautz, Richard Kendrot &
Robert Williams
132 Washington St.
Binghamton, NY 13901

Current Resident
130 Washington St.
Binghamton, NY 13901

Current Resident
132 Washington St.
Binghamton, NY 13901

Patricia Johnson
RR1 Box 1870A
Friendsville, PA 18818

Current Resident
136 Washington St.
Binghamton, NY 13901

T & R Realty Corp.
123 Lake St.
Elmira, NY 14901

Current Resident
138 Washington St.
Binghamton, NY 13901

Current Resident
140 Washington St.
Binghamton, NY 13901

Avelina B. Torres and
R. Lambert
180-16 Wexford Terr - Apt 5A
Jamaica Estates, NY 11432

Current Resident
146 Washington St.
Binghamton, NY 13901

Ronald Sall, Inc.
2332 Oswego St.
Binghamton, NY 13903

Current Resident
52 Court St.
Binghamton, NY 13901

Cheng's Realty Corp.
PO Box 3216
Binghamton, NY 13902

Current Resident
58 Court St.
Binghamton, NY 13901

Chun Lin
24 Williams St.
Kirkwood, NY 13795

Current Resident
48 Court St.
Binghamton, NY 13901

Binghamton Downtown Properties,
L.L.C.
1155 Warburton Ave. - Apt 1R
Yonkers, NY 10701

Current Resident
143 Washington St.
Binghamton, NY 13901

Nehoc Realty Corporation
138 Front St.
Binghamton, NY 13905

Current Resident
137 Washington St.
Binghamton, NY 13901

David Carver
or Current Resident
135 Washington St.
Binghamton, NY 13901

Salvation Army
or Current Resident
127 Washington St.
Binghamton, NY 13901

L.F. Hamlin, Inc.
CVS #561
P.O. Box 4900
Scottsdale, AZ 85261

Current Resident
125 Washington St.
Binghamton, NY 13901

Binghamton Urban
Renewal Agency
38 Hawley St.
Binghamton, NY 13901

Current Resident
121 Washington St.
Binghamton, NY 13901

Current Resident
119 Washington St.
Binghamton, NY 13901

Current Resident
117 Washington St.
Binghamton, NY 13901

Current Resident
115 Washington St.
Binghamton, NY 13901

Current Resident
113 Washington St.
Binghamton, NY 13901

Current Resident
111 Washington St.
Binghamton, NY 13901

Current Resident
109 Washington St.
Binghamton, NY 13901

Current Resident
7 Hawley St.
Binghamton, NY 13901

Current Resident
5 Hawley St.
Binghamton, NY 13901

Current Resident
124 Water St.
Bingharnton, NY 13901

Current Resident
82 Water St.
Bingharnton, NY 13901

Current Resident
69 Washington St.
Bingharnton, NY 13901

Current Resident
67 Washington St.
Binghamton, NY 13901

Current Resident
61 Washington St.
Bingharnton, NY 13901

Current Resident
79 State St.
Bingharnton, NY 13901

Current Resident
43 Water St.
Binghamton, NY 13901

Bache Building Management Co.
P.O. Box F 1706
Binghamton, NY 13901

Current Resident
71 State St.
Bingharnton, NY 13901

Bearcats Development
Group, L.L.C
584 Upper Court St.
Bingharnton, NY 13904

Current Resident
73 State St.
Bingharnton, NY 13901

Current Resident
75 State St.
Bingharnton, NY 13901

Current Resident
73 Water St.
Bingharnton, NY 13901

Current Resident
128 Water St.
Bingharnton, NY 13901

Current Resident
130 Water St.
Bingharnton, NY 13901

L. F. Hamlin, Inc.
1 CVS Dr.
Woodsocket, RI 02895

Current Resident
134 Water St.
Binghamton, NY 13901

Current Resident
142 Water St.
Bingharnton, NY 13901

Penncourt Realty Corp.
84 Court St.
Binghamton, NY 13901

Current Resident
1 Hawley St.
Bingharnton, NY 13901

Current Resident
34 Court St.
Bingharnton, NY 13901

Current Resident
36 Court St.
Bingharnton, NY 13901

Beverly H. Smith &
L. M. Harnlin, Jr.
Lincoln First Bk
P.O. Box 4900
Scottsdale, AZ 85261

Current Resident
38 Court St.
Binghamton, NY 13901

Court Street Commons, L.L.C.
59 Court St.
Binghamton, NY 13901

Current Resident
40 Court St.
Binghamton, NY 13901

Cheng Properties Corp.
P.O. Box 3216
Binghamton, NY 13902

Current Resident
44 Court St.
Binghamton, NY 13901

Satra Realty, L.L.C.
93-16 71st Dr.
Forest Hills, NY 11375

Current Resident
20 Hawley St.
Binghamton, NY 13901

County of Broome
40 Hawley St.
Binghamton, NY 13901

Current Resident
10 Stuart St.
Binghamton, NY 13901

Current Resident
83 Water St.
Binghamton, NY 13901

Current Resident
75 Water St.
Binghamton, NY 13901

Current Resident
77 Water St.
Binghamton, NY 13901

Current Resident
65 Water St.
Binghamton, NY 13901

Current Resident
49 Water St.
Binghamton, NY 13901

Blind Work Association, Inc.
55 Washington St.
Binghamton, NY 13901

Current Resident
56 Water St.
Binghamton, NY 13901

Current Resident
68 Water St.
Binghamton, NY 13901

Current Resident
76 Water St.
Binghamton, NY 13901

SMR Properties, L.L.C.
200 East 66th St. – Apt. E-203
New York, NY 10021

Current Resident
12 Riverside Dr.
Binghamton, NY 13905

Roberson Memorial, Inc.
30 Front St.
Binghamton, NY 13905

Current Resident
32 Front St.
Binghamton, NY 13905

Current Resident
22 Front St.
Binghamton, NY 13905

Current Resident
20 Front St.
Binghamton, NY 13905

Prescott D. Perkins &
Frank C. Petrulis
2134 E. Hamton Rd.
Binghamton, NY 13903

Current Resident
8 Front St.
Binghamton, NY 13905

Anton Lucas
or Current Resident
6 Front St.
Binghamton, NY 13905

Antonie *G.* Lucas
6 Front St.
Binghamton, NY 13905

Current Resident
4 Front St.
Binghamton, NY 13905

James Ehmke & Stacey Gould
or Current Resident
2 Front St.
Binghamton, NY 13905

St. Patrick's Roman
Catholic Church
9 Leroy Street
Binghamton, NY 13905

Current Resident
29 Front St.
Binghamton, NY 13905

Current Resident
31 Front St.
Binghamton, NY 13905

Current Resident
56 Oak St.
Binghamton, NY 13905

Melissa J. Doak
or Current Resident
44 Oak St.
Binghamton, NY 13905

Donald G. McBride
52 Coventry Ln
Binghamton, NY 13903

Current Resident
42 Oak St.
Binghamton, NY 13905

Michael & Bridget Talbut
Frederick J. Talbut
or Current Resident
40 Oak St.
Binghamton, NY 13905

John M. Brown
or Current Resident
38 Oak St.
Binghamton, NY 13905

John F. Kellogg
or Current Resident
36 Oak St.
Binghamton, NY 13905

The Lola Basos Revocable Trust
or Current Resident
34 Oak St.
Binghamton, NY 13905

Associated Catholic Charities
232 Main St.
Binghamton, NY 13905

Current Resident
32 Oak St.
Binghamton, NY 13905

John W. Young
or Current Resident
22 Riverside Dr.
Binghamton, NY 13905

Albert Nocciolino
P.O. Box 1921
Binghamton, NY 13902

Current Resident
18 Riverside Dr.
Binghamton, NY 13905

Robin Alpaugh
or Current Resident
16 Riverside Dr.
Binghamton, NY 13905

Dr. G. Clifford &
Florence B. Decker
8 Hawley St.
Binghamton, NY 13901

Current Resident
8 Riverside Dr.
Binghamton, NY 13905

Current Resident
6 Riverside Dr.
Binghamton, NY 13905

First Church of Christian Scientist
or Current Resident
17 Front St.
Binghamton, NY 13905

19 Front Street
Condominium Association
or Current Resident
19 Front St. – Apt. 4
Binghamton, NY 13905

Helena E. Meloro
or Current Resident
23 Front St.
Binghamton, NY 13905

Current Resident
421 Oak St.
Binghamton, NY 13905

John F. Judski
29 Lennox Ave.
Vestal, NY 13850

Current Resident
9 Front St.
Binghamton, NY 13905

Current Resident
7 Front St.
Binghamton, NY 13905

John H. McDonald
Amm K. Davison & Jame McDonald
2126 Hazard Hill Rd.
Binghamton, NY 13903

Current Resident
3 Front St.
Binghamton, NY 13905

Current Resident
3 Riverside Dr.
Binghamton, NY 13905

Five Riverside Drive
Towers Owners, Inc.
or Current Resident
5 Riverside Dr.
Binghamton, NY 13905

Four Oak Street Owners, Inc.
100 Court St.
P.O. Box 1625
Binghamton, NY 13902

Current Resident
4 Oak St.
Binghamton, NY 13905

Concord Temple
or Current Resident
9 Riverside Dr.
Binghamton, NY 13905

Helen J. Shulman
or Current Resident
14 Oak St.
Binghamton, NY 13905

William R. & Patricia A. Price
or Current Resident
12 Oak St.
Binghamton, NY 13905

David J. & Ellen K. Berti
or Current Resident
10 Oak St.
Binghamton, NY 13905

Maureen M. & Lucas L. Somerwil
or Current Resident
8 Oak St.
Binghamton, NY 13905

Michael F. Kovac, Etal
or Current Resident
6 Oak St.
Binghamton, NY 13905

Broome Mental Health Association
or Current Resident
82 Oak St.
Binghamton, NY 13905

Bal M. Nemani
or Current Resident
80 Oak St.
Binghamton, NY 13905

Pauline J. Browne &
Christopher J. Rosen
7398 Hampsted Sq.
New Albany, OH 43054

Current Resident
78 Oak St.
Binghamton, NY 13905

Henry Kachadourian, Etal
20 Westland Ct.
Binghamton, NY 13905

Current Resident
74 Oak St.
Binghamton, NY 13905

Valentina E. Kozlowski &
Kenneth L. Coleman, AS
2098 Hamton Rd.
Binghamton, NY 13903

Current Resident
72 Oak St.
Binghamton, NY 13905

Current Resident
68 Oak St.
Binghamton, NY 13905

Margaret McCarthy
or Current Resident
66 Oak St.
Binghamton, NY 13905

Nicoletta A. & Scott A. Fiske
or Current Resident
64 Oak St.
Binghamton, NY 13905

John H. Fuller
RD #2 Box 150
Johnson City, NY 13790

Current Resident
62 Oak St.
Binghamton, NY 13905

Michele D. Riach
or Current Resident
60 Oak St.
Binghamton, NY 13905

Christopher J. Ayres &
W. Emma
1434 Lodi St. – Apt. 1
Syracuse, NY 13208

Current Resident
22 Leroy St.
Binghamton, NY 13905

18 Leroy, L.L.C.
or Current Resident
18 Leroy St.
Binghamton, NY 13905

Jack A. Sperling &
Barbara A. Ruchames
or Current Resident
14 Leroy St.
Binghamton, NY 13905

Current Resident
3 Florence Ave.
Binghamton, NY 13905

Paul Goughary
or Current Resident
7 Florence Ave.
Binghamton, NY 13905

David J. & Ellen Hancock-Berti
10 Oak St.
Binghamton, NY 13905

Current Resident
9 Florence Ave.
Binghamton, NY 13905

Thomas F. Catucci
or Current Resident
11 Florence Ave.
Binghamton, NY 13905

Matthew Welch
49 Park St.
Binghamton, NY 13905

Current Resident
13 Florence Ave.
Binghamton, NY 13905

Lewis & Patricia Schultz
RR 1 Box 117D
Sayre, PA 18840

Current Resident
11 Eaton Pl.
Binghamton, NY 13905

Phillip N. & Vanessa V. Cross
5258 Day Hollow Rd.
Endicott, NY 13760

Current Resident
13 Eaton Pl.
Binghamton, NY 13905

Richard & Margo Russell
1400 NY Rt 11
Kirkwood, NY 13795

Current Resident
15 Eaton Pl.
Binghamton, NY 13905

Kennedy Apartments, L.L.C.
P.O. Box 2599
Binghamton, NY 13902

Current Resident
7 Eaton Pl.
Binghamton, NY 13905

Current Resident
16 Florence Ave.
Binghamton, NY 13905

Current Resident
12 Florence Ave.
Binghamton, NY 13905

Beatrice Gorman
or Current Resident
10 Florence Ave.
Binghamton, NY 13905

Mary Q. Benedict
or Current Resident
8 Florence Ave
Binghamton, NY 13905

Pearl Chambliss
6 ½ Florence Ave.
Binghamton, NY 13905

Current Resident
61 Florence Ave.
Binghamton, NY 13905

Sharon L. Wilkins
or Current Resident
6 Florence Ave.
Binghamton, NY 13905

Louise Fabrizi
Anne L. Bartlow
4 ½ Florence Ave.
Binghamton, NY 13905

Current Resident
41 Florence Ave.
Binghamton, NY 13905

Faifal A. Afify
or Current Resident
4 Florence Ave.
Binghamton, NY 13905

Jerome K. Fallon
or Current Resident
2 Florence Ave.
Binghamton, NY 13905

Ralph D. Warren
345 Clearview Pl.
Binghamton, NY 13901

Current Resident
12 Leroy St.
Binghamton, NY 13905

T Herbert, L.L.C.
or Current Resident
10 Leroy St.
Binghamton, NY 13905

Thomas H. Davis
240 Leroy St.
Binghamton, NY 13905

Current Resident
8 Leroy St.
Binghamton, NY 13905

Endicott Trust Company
One M&T Plaza - 10th Floor
Buffalo. NY 14203

Current Resident
6 Leroy St.
Binghamton, NY 13905

Current Resident
4 Leroy St.
Binghamton, NY 13905

Current Resident
49 Front St.
Binghamton, NY 13905

92 Riverside Drive, L.L.C.
or Current Resident
51 Front St.
Binghamton, NY 13905

SEPP, Inc.
or Current Resident
53 Front St.
Binghamton, NY 13905

Olumuyiwa & Patricia Gay
or Current Resident
55 Front St.
Binghamton, NY 13905

Prescott D. Perkins
or Current Resident
57 Front St.
Binghamton, NY 13905

Stephgina Realty Co Inc.
33 Frederick St.
Binghamton, NY 13901

Current Resident
61 Front St.
Binghamton, NY 13905

Brian M. Prew
or Current Resident
63 Front St.
Binghamton, NY 13905

Anthony B. Casella
908 Lehigh Ave.
Vestal, NY 13850

Current Resident
64 Front St.
Binghamton, NY 13905

Stephanie, John & Helena Chomyszak
1 Morningside Dr.
Binghamton, NY 13905

Current Resident
62 Front St.
Binghamton, NY 13905

Cohanim Realty Corp.
or Current Resident
50 Front St.
Binghamton, NY 13905

Richard N. Aswad
or Current Resident
46 Front St.
Binghamton, NY 13905

Mack & Carol G. Travis
323 N Tioga St.
Ithaca, NY 14850

Current Resident
38 Front St.
Binghamton, NY 13905

Barry M. & Annette G. Shaw
or Current Resident
33 Front St.
Binghamton, NY 13905

Heidi Dekar Kaufmann &
Leslie Major Zinn
or Current Resident
35 Front St.
Binghamton, NY 13905

Danny J. Ross &
Robert W. Sweet
or Current Resident
37 Front St.
Binghamton, NY 13905

Barbara H. Skiadas &
Janice M. Vieira
or Current Resident
5 Leroy St.
Binghamton, NY 13905

Current Resident
9 Leroy St.
Binghamton, NY 13905

Current Resident
11 Leroy St.
Binghamton, NY 13905

Current Resident
13 Leroy St.
Binghamton, NY 13905

Janeth H. McCarthy
1309 Honoco Rd.
Aurora, NY 13026

Current Resident
1 Main St.
Binghamton, NY 13905

Current Resident
3 Main St.
Binghamton, NY 13905

Florence Street
Associates, L.L.C.
PO Box 265 WVS
Binghamton, NY 13905

Current Resident
5 Main St.
Binghamton, NY 13905

Bernardino R. Fiacco
or Current Resident
7 Main St.
Binghamton, NY 13905

Edward P. Hickey
or Current Resident
9 Main St.
Binghamton, NY 13905

HRD Enterprises, L.L.C &
E & B Kradjian, L.L.C.
84 Court St. - Ste 600
Binghamton, NY 13901

Current Resident
11 Main St.
Binghamton, NY 13905

H & F Realty
60 Crestmont Rd.
Binghamton, NY 13905

Current Resident
96 Front St.
Binghamton, NY 13905

Rittenburg Enterprises, LTD
P.O. Box 265 WVS
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Binghamton, NY 13905

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92 Front St.
Binghamton, NY 13905

Robert L. McDevitt
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88-90 Front St.
Binghamton, NY 13905

Gregory E. Nichols
or Current Resident
86 Front St.
Binghamton, NY 13905

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84 Front St.
Binghamton, NY 13905

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Current Resident
82 Front St.
Binghamton, NY 13905

The United Pentecostal
Church of Binghamton
or Current Resident
80 Front St.
Binghamton, NY 13905

Robert J. Connelly
666 Chenango St.
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Current Resident
78 Front St.
Binghamton, NY 13905

John J. Burns, Jr.
4747 Vestal Pkwy E
Vestal, NY 13850

Current Resident
76 Front St.
Binghamton, NY 13905

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Properties, L.L.C.
4747 Vestal Pkwy E
Vestal, NY 13850

Current Resident
74 Front St.
Binghamton, NY 13905

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Binghamton, NY 13905

Current Resident
66 Front St.
Binghamton, NY 13905

IT Hospitality, Inc.
498 Foster Rd.
Vestal, NY 13850

Current Resident
65 Front St.
Binghamton, NY 13905

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98 Oak St.
Binghamton, NY 13905

Current Resident
79 Front St.
Binghamton, NY 13905

Current Resident
81 Front St.
Binghamton, NY 13905

Binghamton Club
or Current Resident
83 Front St.
Binghamton, NY 13905

Current Resident
87 Front St.
Binghamton, NY 13905

Current Resident
91 Front St.
Binghamton, NY 13905

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Current Resident
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Binghamton, NY 13905

Terrence P. Cribbs
or Current Resident
21 Main St.
Binghamton, NY 13905

Paul M. & Teresa D. Price
79 Kendall Ave.
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Current Resident
25 Main St.
Binghamton, NY 13905

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27 Main St.
Binghamton, NY 13905

Current Resident
35 Main St.
Binghamton, NY 13905

Current Resident
41 Main St.
Binghamton, NY 13905

Current Resident
43 Main St.
Binghamton, NY 13905

Current Resident
110 Oak St.
Binghamton, NY 13905

Current Resident
108 Oak St.
Binghamton, NY 13905

Current Resident
106 Oak St.
Binghamton, NY 13905

Current Resident
104 Oak St.
Binghamton, NY 13905

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102 Oak St.
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Susquehanna Resources &
Environment, Inc.
or Current Resident
84 Oak St.
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317 Manchester Rd.
Vestal, NY 13850

Current Resident
18 Eaton Pl.
Binghamton, NY 13905

Stephen R. Yanus
or Current Resident
16 Eaton Pl.
Binghamton, NY 13905

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17 Boland Rd.
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17 Main St.
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WICZ
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ATTACHMENT F

The site is located in an urban commercial area within the City of Binghamton, NY. It is approximately 0.25 miles east and approximately 0.3 miles south of residential areas. It is located approximately 0.3 miles from the Binghamton YMCA, which has outdoor recreational facilities, and approximately 0.1 mile from the Broome County Veterans Memorial Arena, which is an indoor sports complex. There are no agricultural areas nearby the site.

ATTACHMENT G

The site is located at the confluence of the Susquehanna and Chenango Rivers in Binghamton, Broome County, NY. Regionally, fill and unconsolidated glacial deposits ranging in total thickness from several to 50 or more feet overlie a dense glacial till. Exact conditions at the site are unknown.

The site is covered with buildings and asphalt pavement, which serve to limit precipitation infiltration. Subsurface contaminant discharges have the potential to contaminate groundwater at and near the site. Groundwater is expected to flow south and west and discharge to the Susquehanna and Chenango Rivers. Because the site is adjacent to both rivers, any resultant groundwater contamination is expected to be limited in aerial extent.

No private or public groundwater wells are known to exist down gradient of the site (i.e. between the site and the rivers) or within one-half mile up gradient of the site.

ATTACHMENT H

No detailed information regarding the geology of the site exists that NYSEG is aware of. The following information, as presented in the Final Remedial Investigation Report, Court Street Site, Binghamton, NY, dated December 2002, is expected to be relevant as the Court Street site is approximately one mile from the Washington Avenue Site:

Regional Geologic Setting

The city of Binghamton is located in the Appalachian Plateau physiographic province, a region of similar geologic history covering the majority of central and western New York State. The rock and soil in the area are best understood in the context of the Plateau's history, discussed briefly below.

Prior to Pleistocene Glaciation

The interbedded shales, siltstone, and sandstone which form the bedrock of the region were deposited as sediments in an inland sea during the upper Devonian age (Rickard and Fisher, 1970). The long sequence of erosion that has left Central New York's' present landscape began approximately 340 million years ago when the inland sea drained and the region became dry land. The rock itself has remained nearly flat lying, cushioned from the compressive mountain building forces (which created the folds and faults in like-aged rocks south in the Pennsylvania), by a ductile salt layer in underlying Silurian aged rock.

The Pleistocene Glaciation

Several glacial advances have swept over Central New York. The last ice sheet retreated from its southern terminus in Pennsylvania approximately 17,000 years agoe. The present day Chenango and Susquehanna Rivers locally follow valleys carded by the glacier, valleys which probably predated the glaciation but was deepened and widened by glacial ice. The glacier carried unconsolidated material (clay, silt, sand, gravel, cobbles, and boulders) with it as it moved southward, and deposited this material on the land. Unsorted deposits, referred to as till, were deposited beneath the ice, or at the edge of melting ice, while deposits exhibiting a higher degree of sorting (i.e. stratified drift) were deposited by glacial melt water in rivers and lakes formed while the glacier slowly melted.

Post Glaciation

The present day Chenango and Susquehanna Rivers formed as the glacier receded from the area 10,000 to 15,000 years ago. The rivers flow largely on the glacial deposits which fill the valleys, gradually cutting into them and carrying the material downriver to be deposited again as alluvium. The soils deposited since the last glaciation are primarily this sand, silt, and clay left by the rivers and their tributary streams.

Binghamton was built on a broad lowland valley where the Chenango and Susquehanna Rivers join. The paths of the rivers, and the location of their junction have meandered across the valley floor leaving old stream channels, sand bars, and sediment filled oxbows superimposed on the glacial outwash.

Man's Influence

In two centuries of intensive habitation, the people of Binghamton have significantly modified the landscape. The rivers are now dammed and lined by floodwalls and dikes. Formerly swampy areas in the valley floor have been drained or raised with fill. A consideration of the near-surface geology must now include these man-made influences.

Remedial Investigation Work Plan

Washington Street Former MGP Site Binghamton, New York

New York State Electric & Gas Corporation
Binghamton, New York

February 2005

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

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Appendices

1. Introduction

1.1 General

At the request of New York State Electric & Gas Corporation (NYSEG), Blasland, Bouck & Lee, Inc. (BBL) has prepared this work plan for conducting a Remedial Investigation (RI) at the Binghamton (Washington Street) former manufactured gas plant (MGP) site (the "site") located on Washington Street in Binghamton, New York. The RI will be performed to support site redevelopment under the New York State Brownfield Cleanup Program (BCP). The tasks described below largely reflect the agreements made between NYSEG, the New York State Department of Environmental Conservation (NYSDEC), and BBL in:

- a Conceptual RI Work Plan that was e-mailed by BBL to the NYSDEC on January 3, 2005; and

- NYSDEC's comments on the Conceptual RI Work Plan, as discussed during a January 20, 2005 conference call between NYSEG and the NYSDEC.

At this time, it is anticipated that the RI will consist of the following principal tasks, discussed in the subsequent sections:

- Area Reconnaissance and Mapping (Section 2);
- Soil Investigation (Section 3); and
- Groundwater Investigation (Section 4).

Sections 2 through 4 describe the activities to be performed under each of the tasks. Details about the soil and groundwater investigation, including proposed sampling rationale, are presented in Table 1. If needed, based on the results of the soil and groundwater investigation, a sediment investigation will be performed in the Chenango River west of the site. Section 5 describes potential sediment investigation activities (as currently envisioned). Section 6 discusses activities to identify and evaluate the significance of potentially complete human exposure pathways. Section 7 describes general field procedures for survey, waste handling, and decontamination. Section 8 provides the anticipated schedule for completing the RI field work and submitting the RI Report.

Appendix A – *DNAPL Contingency Plan* describes procedures to be followed during drilling to limit the potential for remobilizing dense non-aqueous phase liquid (DNAPL), if encountered. Appendix B – *Field Sampling Plan* (FSP) contains detailed field procedures and protocols that will be followed during the RI. Appendix C – *Quality Assurance Project Plan* (QAPP) presents the analytical methods and procedures that will be used to analyze soil and groundwater samples collected during the RI. Appendix D – *Health and Safety Plan* (HASP) presents the health and safety procedures, methods, and requirements that will apply to field personnel during implementation of the field work. Appendix E – *Community Air Monitoring Plan* (CAMP) presents air monitoring procedures and actions to be taken, if needed, to protect downwind receptors from potential airborne releases of constituents of interest.

1.2 Remedial Investigation Objectives

The objectives of the RI are to: 1) provide data to assess current site conditions and evaluate whether future investigation and/or remedial activities may be necessary; and 2) develop a site conceptual model. NYSEG has developed the following specific objectives for the RI:

- evaluate the presence and extent of MGP or other impacts in soil at the site by collecting, visually characterizing, and analyzing surface and subsurface soil samples;

- evaluate the presence and extent of MGP or other impacts in groundwater beneath the site by collecting and analyzing groundwater samples;

- characterize the general shape of the confining layer, and develop a preliminary assessment of shallow groundwater flow patterns at the site;

- investigate the potential impacts associated with former MGP gas holders;

- evaluate the presence and extent of MGP or other impacts in the Chenango River adjacent to the site (if necessary, based on soil and groundwater investigation results) by probing and collecting sediment samples;

- develop a conceptual site model using the data gathered during this RI; and

- evaluate potential human exposure pathways for both current and anticipated future site conditions using the investigation sampling results.

A dynamic RI will be implemented; that is, available data will be continually evaluated while still in the field and, in consultation with the NYSDEC, used to guide field activities. The site investigation procedures presented herein will be used, as appropriate, if the scope of the site investigation work is expanded during the course of RI field work.

The technical approach to address the above objectives is provided in Sections 2 through 5 and in Table 1. A description of the site and relevant site history is presented below, followed by a summary of previous investigation activities, and a discussion of the site's geologic setting.

1.3 Site Description and History

The site is located in the City of Binghamton, in Broome County, New York. A site location map is included as Figure 1. The former MGP occupies approximately 1.4 acres of land within a city block bounded by Washington Street to the east, Water Street to the west, Susquehanna Street to the north, and Riverside Drive to the south. The site currently includes two, 2-story commercial buildings, associated parking lots, and a residential (apartment) building. One of the two commercial buildings is used by Rexel Electric Supply (formerly Wehle Electric) as an electrical supply warehouse and showroom. This building is scheduled to be demolished in mid-2005 in connection with planned brownfield redevelopment activities. The other commercial building is used by the American Automobile Association (AAA) as an office/travel center. This building is not included in redevelopment plans. The site is presently bounded to the north and south by various commercial buildings and parking lots, to the east by a highway access ramp, and to the west by an industrial property and the Chenango River. The layout of the site and the surrounding area is shown on Figure 2.

Based on available NYSEG records, the Washington Street MGP was first operated by the Binghamton Gas Light Company in 1853. The plant initially produced gas by the coal carbonization process and later (around 1884) by the carbureted water gas process. Based on review of Sanborn maps, the site apparently contained the following major structures: two gas holders in the central portion of the site (Holder #1 and #2); various purifiers, super heaters, and several sheds north of the two gas holders; and offices in the western portion of the site. The suspected former locations of these structures (as depicted on a Sanborn map dated 1887) are shown on Figure 2.

NYSEG records indicate that in 1887 the Binghamton Gas Light Company merged with Brush-Swan Electric Light Company to become Binghamton Gas and Electric Company. The Washington Street MGP ceased operations in 1888, and the land was sold when gas manufacture was consolidated with another plant in the City of Binghamton (the former Court Street MGP). Based on review of Sanborn mapping, all abovegrade MGP-related structures had been demolished by 1891, except for the former gas holder closest to Washington Street (Holder #1). As discussed below, Holder #1 was razed sometime between 1918 and 1950.

Sanborn mapping indicates that a lumber yard and carpentry shop occupied a portion of the site after MGP operations ceased. By the early 1900s, the majority of the former MGP had been redeveloped as the Larrabee-Deyo Motor Truck Company, which included a machine shop and assembly building in the western portion of the site (part of the existing Rexel Electric Supply building), a warehouse within former Holder #1, and an office/showroom in the eastern portion of the site. As indicated by Sanborn mapping, the warehouse/former Holder #1 was razed sometime between 1918 and 1950. By 1950, the site was occupied primarily by an automobile sales and service station and used car lot. A plumbing supply building had been constructed at the current location of the AAA building, and a gas station had been constructed south of the former MGP (at the location of the Henneken's building as shown on Figure 2).

Land use in the vicinity of the former MGP has historically been commercial/industrial. A large tannery, which later became an Endicott Johnson shoe factory, was formerly located east of the MGP on property now occupied by a highway access ramp. In addition, a carriage manufacturing facility with a paint shop was formerly located north of the MGP on property now occupied by a ski and bike shop (Berger's Ski Shop).

Based on review of a report titled *Phase II Groundwater Investigation Report* prepared by Dunn Geoscience Corporation (Dunn, September 1991), heating oil for the existing Rexel Electric Supply (previously Wehle Electric) building was formerly stored within a 6,000 gallon underground storage tank (UST) located within the footprint of Holder #1. The UST and approximately 65 cubic yards (CY) of stained soils around/below the tank were removed in January 1991. A concrete wall, likely the foundation wall of the former gas holder, was uncovered during excavation activities. A concrete floor was not encountered at the bottom of the excavation, either because the holder had an earthen bottom or the tank excavation did not extend as far as the bottom of the former holder (the depth of the UST excavation was not identified in the *Phase II Groundwater Investigation Report*). Results of investigation activities performed in connection with the UST removal are summarized below in Subsection 1.4.

1.4 Summary of Previous Investigation Activities

A Phase I Environmental Site Assessment of the former Wehle Electric property was performed by Dunn in August 1990. The assessment included a visual inspection of the property, a review of historical database listings, and a review of local and regional geologic/hydrogeologic conditions. Based on the visual inspection, Dunn identified the potential presence of a UST within the former Holder #1 footprint. As indicated above, the

UST and associated impacted soils were removed in January 1991. A groundwater investigation (the Phase II Groundwater Investigation) was performed after impacted soils around the tank were removed. The investigation included the installation of two temporary wells within the UST excavation during January 1991 (wells PW-1 and PW-2) and three permanent monitoring wells around the excavation during March 1991 (wells MW-1 through MW-3). The locations of the temporary and permanent monitoring wells are shown on Figure 2.

The temporary wells were installed directly within the open UST excavation and were supported by imported backfill used to restore the excavation. Soil borings were completed at each permanent monitoring well location using hollow-stem auger drilling methods. Soil samples recovered at each boring location were visually characterized for color, texture, and moisture content. A portion of each sample was also placed in a glass jar for headspace screening using a photoionization detector (PID). Visible staining was encountered in the soil samples collected from the MW-3 boring below a depth of 7 feet below ground surface (bgs). Visible oil and oil-tar was noted at that location from approximately 11 to 17 feet bgs. Headspace screening results for samples collected from the 13 to 15 foot and 15 to 17 foot intervals at location MW-3 were 140 ppm and 40 ppm, respectively. Visible staining and elevated headspace screening results were not encountered in soils recovered at any of the other boring locations. The permanent monitoring wells were constructed with 2-inch diameter polyvinyl chloride (PVC) pipe with 0.20-inch slot screens placed to straddle the water table. A 10-foot long screen section was used in monitoring wells MW-1 and MW-2, and a 20-foot long screen section was used in monitoring well MW-3.

Groundwater samples were collected from each well (except PW-2) during May 1991. Each sample was submitted for laboratory analysis for volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Method 503.1 and petroleum hydrocarbon identification using New York State Department of Health (NYSDOH) Method 310-14. Results of the sampling are presented in the *Phase II Groundwater Investigation Report* and summarized below:

- *PW-1:* Aside from concentrations of n-butylbenzene and naphthalene, concentrations of each VOC constituent identified in the groundwater sample collected from temporary well PW-1 were below the groundwater quality standards presented in 6 NYCRR Part 703. N-butylbenzene and naphthalene were identified in the sample at concentrations of 9.0 and 14 ppb, respectively, which were slightly above the groundwater quality standards (5 and 10 ppb, respectively). Petroleum identification analysis indicated the presence of No. 4 fuel oil in this sample.

- *MW-1 and MW-2:* VOCs were not detected above laboratory detection limits in the groundwater samples collected from permanent monitoring wells MW-1 and MW-2.

- *MW-3:* A strong petroleum-type odor and sheen were noticed in the groundwater sample collected from monitoring well MW-3. Eleven VOCs were detected in the groundwater sample, and the concentrations ranged from 21 ppb (isopropylbenzene) to 6,600 ppb (benzene). The concentration of each detected VOC constituent exceeded the groundwater quality standards presented in 6 NYCRR Part 703. Petroleum identification analysis indicated the presence of No. 4 fuel oil, gasoline, and various unidentified compounds in the sample.

The *Phase II Groundwater Investigation Report* suggests that the VOCs identified in monitoring well MW-3 could potentially be attributed to another nearby UST. The report indicates that a possible oil standpipe was observed along the west side of the AAA building.

1.5 Site Topography and Drainage

The Site is located on relatively level land at an elevation of approximately 840 to 850 feet above mean sea level (AMSL). Ground surface elevations just beyond one mile to the north and south of the site rise to over 1,300 feet AMSL. Stormwater appears to be conveyed offsite via a combination of overland sheet flow and underground storm sewer piping connected to various stormwater catch basins. The *Phase II Groundwater Investigation Report* shows two stormwater catch basins in the parking lot east of the Rexel Electric Supply building and one catch basin in the parking lot west of the AAA building. It is suspected that these catch basins convey stormwater runoff to an existing municipal storm sewer system beneath Washington Street and Water Street. The *Phase II Groundwater Investigation Report* also indicates the potential presence of dry wells in the area for stormwater drainage.

1.6 Geologic/Hydrogeologic Setting

The City of Binghamton is located in the Appalachian Plateau physiographic province on a broad lowland valley surrounded by steeply rolling hills. The site is situated near the center of the city at the confluence of the Chenango and Susquehanna Rivers. As indicated above, topographic relief at the site is slight, with the land-surface elevation ranging from approximately 840 to 850 feet AMSL. The elevation of the Chenango and Susquehanna Rivers surface water near the site is approximately 830 feet AMSL (BBL, 2005).

Over the course of urbanization, the landscape of Binghamton has been significantly modified. The rivers are now dammed and lined by flood walls and dikes. Formerly swampy areas in the valley floor have been drained or raised with fill. Surface soils along the Chenango and Susquehanna Rivers in the area of the site consist largely of fill and disturbed soils, and an assortment of man-made structures, originating in the site's industrial history. Overburden stratigraphy generally consists of a post-glacial alluvial silt and clay of variable thickness, likely deposited as the Chenango and Susquehanna Rivers meandered through the valley, underlain by glacial outwash sand and gravel (Randall, 1978). These soils are seated on a dense basal till comprised of a mixture of shale gravel, and olive gray hard silt and clay. The Chemung Shale has been mapped as the bedrock of the area (Rickard and Fisher, 1970). Based on the results of subsurface investigations at a nearby NYSEG Former MGP site in Binghamton, the depth to bedrock beneath the site could be approximately 90 feet (BBL, 2002).

Based on the results of the Phase II Groundwater Investigation, the depth to groundwater at the site is approximately 15 feet below grade (Dunn, 1991). The results of the Phase II Investigation also indicate that groundwater inside of Former Holder #1 is mounded at approximately five feet below grade. This suggests that the foundation (walls and floor) of this holder may be somewhat intact and that downward movement of infiltrating precipitation is impeded by the holder. Other factors that may influence shallow groundwater flow include buried utilities and structures, interlocking sheet pilings located along the river banks (which were constructed to abate flood and erosion), and groundwater pumping at the city and county government offices located northeast of the site (Dunn, 1991). Shallow groundwater flow near the site is expected to be to the west-southwest, toward the Chenango River.

2. Area Reconnaissance and Mapping

It is currently anticipated that the RI will be implemented in at least two phases. The first phase will include a soil and groundwater investigation at the former MGP site. After the existing Rexel Electric Supply building is demolished, a second phase will be performed and will include soil investigation activities within the footprint of the demolished building. If needed based on the results of the Phase I and Phase II activities, a third phase will be performed and will include a sediment investigation in the Chenango River west of the site.

Prior to entry onto the former MGP site, access agreements will be secured with the current property owners for the reconnaissance and sampling activities. Also, before starting field work, additional information that may be relevant to the project will be obtained, including:

- possible locations of groundwater withdrawal or recharge near the project area that could influence groundwater flow;
- locations and construction details for nearby water-supply piping, storm and sanitary sewers, gas lines, and other utilities for use in evaluating potential subsurface pathways;
- construction details for the flood-control wall located along the east bank of the Chenango River near the project area;
- historical archive information related to the former MGP; and
- available aerial photographs showing site use after MGP operations had ceased.

DigSafely NY will be contacted at least three days prior to the start of each phase of investigation involving drilling of soil borings, excavation of test pits, and/or installation of monitoring wells to identify underground utilities connecting to the businesses currently operating at the site. Following the location of underground utilities (including water supply, electric, gas, telephone, and sanitary/storm sewer), BBL will conduct a site visit with NYSDEC and NYSEG personnel to coordinate onsite activities and field-mark the proposed sampling locations. Proposed sampling locations, including soil sampling and monitoring well locations, are shown on Figure 3. The proposed sampling locations shown on Figure 3 will be adjusted (as necessary) in the field based on the location of aboveground or underground utilities and visual observations of field personnel (e.g., visually stained soil, accumulated oil, etc.), with input from the NYSDEC and NYSEG. The soil sampling and monitoring well locations will be marked with flagged metal pins.

As part of the reconnaissance at the start of the RI, onsite personnel will identify potential building downspouts, if any, that could discharge flow directly to the subsurface and affect subsurface conditions. In addition, personnel will attempt to locate both the oil standpipe near the AAA building and the stormwater catch basins shown in the *Phase II Groundwater Investigation Report*. The locations of any additional standpipes or catch basins will be documented. The catch basin covers will be removed to evaluate whether the catch basins discharge directly into an underlying pit/dry well or contain piping that may discharge to the municipal storm sewer system. The potential presence of accumulated debris (silt, sand, and gravel) within the basins will be noted. Debris sampling activities will be performed as part of the RI, if needed, based on conditions identified within the catch basins and the results of the soil and groundwater investigation activities.

3. Soil Investigation

3.1 General

It is anticipated that the soil investigation will be conducted in two phases. The first phase is expected to begin approximately two weeks following NYSDEC approval of this work plan (potentially during the third week of April 2005). The second phase will be conducted following demolition of the Rexel Electric Supply building (potentially in late-August 2005).

Soil investigation objectives are presented below, followed by a discussion of soil boring, test pit excavation, and soil sampling activities.

3.2 Soil Investigation Objectives

The objectives of the soil investigation are to:

- determine the presence and level of MGP-related and other constituents in soils at and in the vicinity of the site;

- assess the construction and condition of former MGP structures and the potential presence of MGP-related impacts associated with the structures;

- obtain visual and analytical data to develop a site conceptual model.

In addition to the objectives outlined above, the subsurface information collected as part of this investigation will be used to characterize the distribution and saturated thickness of underlying materials. This information is important in understanding how shallow groundwater is moving and whether there are areas where DNAPL, if present, could preferentially collect or migrate.

3.3 Soil Boring and Sampling

The first phase of the soil investigation will include drilling and sampling of soil borings. The borings will be completed at 16 locations (locations SB-1 through SB-16), three of which are inside the footprint of former Holder #1 (locations SB-1 through SB-3). During the second phase of the soil investigation, soil borings will be completed at an additional seven locations (locations SB-17 through SB-23) following demolition of the Rexel Electric Supply building. Three of the Phase II boring locations (locations SB-17 through SB-19) are inside the footprint of former Holder #2. Proposed soil boring locations are shown on Figure 3.

All soil borings will be drilled using a conventional drilling rig and standard hollow-stem auger and split-spoon sampling techniques. Each boring will be drilled to the depth of a potential confining unit, which is anticipated to be approximately 50 feet bgs. Where feasible, soil borings will first be drilled in potential DNAPL source areas (within the former holders). Soil borings within the footprints of the former gas holders will be drilled through the bottom of the holders unless conditions, such as mobile NAPL encountered in the bottom of the holders, prohibit such drilling. If NAPL is encountered within a given gas holder, a second soil boring will be drilled immediately outside the holder wall. The DNAPL Contingency Plan in Appendix A will be followed to mitigate potential drag-down of NAPL.

Soil samples will be collected continuously at each boring location from grade to their final depth using a 2-inch outside diameter by 2-feet long split-spoon samplers. Soil recovered from each 2-foot interval will be visually characterized for color, texture, and moisture content, and headspace-screened with a PID. The presence of visible staining, NAPL, and obvious odors encountered in the soil will be noted. Up to two samples from each boring will be submitted for laboratory analysis. Sampling intervals selected for analysis will be based on visual characterization and PID headspace screening results, as indicated below:

- For borings where visible staining, NAPL, obvious odors, or elevated PID readings are identified, one sample from the "worst-case" sampling interval and a second sample from the first apparent "clean" interval underlying the impacted materials will be submitted for laboratory analysis.

- For borings where no visible staining, NAPL, obvious odors, or elevated PID readings are identified, one sample from the first interval (0 to 6-inches) of material below surface coverings (asphalt/sub-base) and a second sample from the 2-foot interval directly above the water table will be submitted for laboratory analysis.

Considering that there have been other previous site uses and potential sources besides the former MGP, the majority of the soil samples designated for laboratory analysis (approximately 90%) will be analyzed for a comprehensive list of potential constituents of interest. The remaining 10% of the samples (selected samples collected directly from the footprint of the former gas holders) will undergo analysis for a more focused list of constituents typically associated MGP residues. Analyses to be performed on the soil samples are summarized below:

- Soil samples collected from two of the three soil borings within each former gas holder (borings SB-1 and SB-3 in Holder #1 and borings SB-17 and SB-19 in Holder #2) will be submitted for laboratory analysis for the primary chemical components associated with MGP residues: benzene, toluene, ethylbenzene, and xylenes (BTEX compounds) using USEPA SW-846 Method 8260, polycyclic aromatic hydrocarbons (PAHs) using USEPA SW-846 Method 8270, and total cyanide using USEPA SW-846 Method 9010. Soil samples collected from the remaining boring within each former gas holder (locations SB-2 and SB-18) will be submitted for a larger suite of constituents as identified in the bullet below.

- Soil samples collected from the third boring location within each former holder and all boring locations outside the holders will be submitted for laboratory analysis for Target Compound List (TCL) VOCs plus methyl tert-butyl ether (MTBE) using USEPA SW-846 Method 8260, TCL SVOCs using USEPA SW-846 Method 8270, the 8 RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) using USEPA SW-846 Method 6010/7471, and total cyanide using USEPA SW-846 Method 9010. These analyses will include the primary chemical components associated with MGP residues plus other parameters to evaluate potential non-MGP-related sources.

- Soil samples collected from three soil borings (one sample per boring from visibly impacted soils) will be analyzed for Toxicity Characteristic Leaching Procedure (TCLP) benzene, reactivity (reactive cyanide and reactive sulfide), total sulfur, and flashpoint (USEPA SW-846 test methods) to evaluate whether soils at the former MGP, if excavated, may meet the definition of a RCRA hazardous waste. It is currently anticipated that the soil samples to be analyzed for these parameters will be collected from borings SB-3, SB-19, and SB-21. Additional locations will be identified, as appropriate, based on field conditions encountered.

- Soil samples collected from up to five soil borings (potentially borings SB-3, SB-7, SB-10, SB-19, and SB-21) will be submitted for laboratory analysis for PCBs using USEPA SW-846 Method 8082. Alternate locations will be identified, as appropriate, based on field conditions encountered.

Details of the proposed soil investigation are presented in Table 1. A summary of proposed sample analyses is presented in Table 2.

NYSEG recognizes that additional soil borings may be needed if observations made during drilling indicate that MGP residuals are present and their extent has not been adequately defined. As such, the soil-boring program will be flexible, with additional borings drilled as needed to attempt to define the extent of MGP impacts. The need for and location of such borings will be discussed with NYSEG and then the NYSDEC.

3.4 Test Pit Excavation and Sampling

Test pits will be excavated during the second phase of the soil investigation near the gas holders, purifier, and superheaters and along the western edge of the MGP site, only if it is determined that site remediation will not occur for an extended period of time. Otherwise, test pits will be excavated in connection with site remediation activities. The number and location of test pits to be excavated will be determined based upon the results of the first phase of the soil investigation and discussions with NYSEG and then the NYSDEC. The pits would be excavated to evaluate remaining subsurface construction materials associated with former MGP structures, their condition, and the presence of MGP-related impacts associated with the structures. The pits will also be used to observe the subsurface material along the western area of the site.

Test pits will be excavated to the water table, the reach of the backhoe, or to the depth of subsurface obstructions, whichever is shallower. Subsurface soil samples will be collected at approximately two-foot depth intervals within each pit for visual characterization and headspace screening using a PID. The presence of visible discoloration, NAPL, and/or obvious odors encountered in the soil will also be noted. If needed, one or more samples from each test pit may be submitted for laboratory analysis. The potential need for laboratory analysis of samples from the test pits will be discussed with NYSEG and then the NYSDEC. Following excavation and sampling, the test pits will be backfilled with the material removed from the pits.

4. Groundwater Investigation

4.1 General

The groundwater investigation will be conducted concurrently with the first phase of the soil investigation. Based on review of monitoring well construction information for the three potentially existing monitoring wells around the Rexel Electric Supply building, these wells (wells MW-1 through MW-3) may be appropriate for use in the investigation. The condition of the wells will be evaluated at the start of the groundwater investigation, and the wells will be repaired or replaced, as appropriate. Several new groundwater monitoring wells will be installed, developed, and sampled in this investigation, as discussed below.

Groundwater investigation objectives are presented below, followed by a discussion of the approach for evaluating groundwater flow patterns and hydraulic characteristics beneath the site, and collecting groundwater samples for laboratory analysis.

4.2 Groundwater Investigation Objectives

The objectives of the groundwater investigation are to:

- characterize groundwater-flow patterns in the penetrated overburden;
- assess the hydraulic characteristics of the overburden; and
- assess the presence and level of MGP-related constituents and other constituents dissolved in groundwater at concentrations exceeding NYSDEC Class GA Standards, if any.

The approach to address each of these objectives is briefly discussed below. Details of the groundwater investigation are presented in Table 1, and the proposed monitoring well locations are shown on Figure 3.

4.3 Groundwater Flow Patterns/Hydraulic Characteristics

The groundwater flow patterns and hydraulic characteristics beneath the site will be evaluated by:

- installing and developing five water-table groundwater monitoring wells (MW-4 through MW-8, as shown on Figure 3), up to three new deep overburden groundwater monitoring wells (locations and depths to be determined based on observations made during soil boring activities discussed in Section 3), and a piezometer (PZ-1, as shown on Figure 3) using the methods described in the FSP;
- performing specific-capacity tests on the new and existing monitoring wells during low-flow sampling (discussed below); and
- conducting at least one comprehensive fluid-level measurement round from all new and existing monitoring wells.

The proposed locations of the water-table groundwater monitoring wells and piezometer are shown on Figure 3. Details and the rationale for the proposed work described above are presented in Table 1.

4.4 Groundwater Quality Analysis

One round of groundwater samples will be collected from the new and existing monitoring wells to determine the presence and level of MGP-related constituents dissolved in groundwater at concentrations exceeding NYSDEC Class GA Standards, if any. Low-flow methods will be used to collect groundwater samples from the wells for laboratory analysis for PCBs, TCL SVOCs, the 8 RCRA metals, and total cyanide. In order to minimize the potential loss of VOCs through peristaltic pumping agitation, dedicated bailers will be used to collect groundwater samples from the wells for laboratory analysis for TCL VOCs plus MTBE. Groundwater sampling techniques are described in the FSP. Field parameters, consisting of pH, conductivity, dissolved oxygen, temperature, and turbidity will be measured during groundwater sampling.

5. Sediment Investigation

5.1 General

A sediment investigation may be performed in the Chenango River west of the site as a third phase of site investigation, if warranted based on the results of the soil and groundwater investigations. It is anticipated that sediment investigation would only be performed if one of the following conditions is met:

- MGP-related impacts (e.g., discoloration, NAPL) are observed in soil borings extending toward the western property boundary;
- NAPL is encountered in monitoring wells along the western property boundary (i.e., separate phase material in the wells as opposed to NAPL droplets in soil samples); or
- MGP-related constituents are detected in groundwater samples collected from the downgradient wells at concentrations exceeding NYSDEC Class GA Standards.

The need for a sediment investigation would be discussed with NYSEG and then the NYSDEC following review of the Phase I and II soil and groundwater investigation results.

Sediment investigation objectives are presented below, followed by a discussion of site reconnaissance, sediment probing, and sediment sampling activities that would likely be conducted, if necessary.

5.2 Sediment Investigation Objectives

If a sediment investigation were to be performed, the objectives would be to:

- identify deposits of near-shore, river-laid sediments (if any) through reconnaissance and probing;
- identify erosional and/or depositional areas along the river through reconnaissance and probing;
- determine whether sheens are observed when the riverbed is disturbed during probing, and (if so) characterize the extent of the sheen producing reaches;
- characterize the quality of river sediment by collecting samples upstream, adjacent to, and downstream of the site and analyzing the samples for potential constituents of interest;
- assess the vertical distribution of MGP-related impacts in sediment (if any);
- segregate MGP-related impacts from background sources (if necessary) by performing a preliminary source evaluation of chemical constituents detected in sediment samples;
- obtain a better understanding of river characteristics and hydraulics; and
- obtain visual and analytical data to update the site conceptual model.

Site reconnaissance, sediment probing, and sampling activities that would be conducted are discussed below and further detailed in Table 1.

5.3 Site Reconnaissance

The distribution of sediment-bound constituents (particularly PAHs) in an aquatic system is controlled by the hydraulic and geomorphic conditions of the system. To properly select sample locations and interpret the results, a site reconnaissance would be conducted (accompanied by the NYSDEC) to characterize the morphology and identify potential sources and sinks of PAHs in the system. The site reconnaissance would consist of walking the east bank of the Chenango River to evaluate river-bottom characteristics and assess the hydraulic and geomorphic conditions. General bank characteristics, including the presence of staining or weeps (if any) and location of any discharges into the river (outfall pipes) would also be recorded. The reach of the river that would be covered by reconnaissance extends from the confluence of the Chenango and Susquehanna rivers downstream of the site to approximately 750 feet upstream of the confluence.

5.4 Sediment Probing

Sediment probing locations would be determined in consultation with the NYSDEC, based on the findings of the site reconnaissance. For the purposes of this Work Plan, and to provide data coverage within the Chenango River, it is assumed that sediment probing would be conducted along 12 transects to be established in the river adjacent to the former MGP site (see Figure 3). Transects would be spaced approximately 50 feet apart and extend approximately 60 feet from the riverbank into the river. Sediment probing would be completed at each transect at distances of approximately 5 feet, 20 feet, 40 feet, and 60 feet from the eastern shoreline. Field personnel would record the following: water depth, sediment thickness, sediment composition, presence of NAPL/sheens, odors, and any pipes or other features that discharge to the River. Additional probing would be performed, as appropriate, near outfall pipes and in areas between transects where soft deposits are identified. Additional probing would also be performed in areas where a sheen is observed (only if the sheen is not suspected to be the result of decaying natural organic material) to attempt to define the extent of the sheen.

All probing transect endpoints along the riverbank would be surveyed by a NYSEG surveying crew. Additionally, field personnel conducting probing activities would record coordinates for individual probing locations, as determined using a Global Positioning System (GPS) receiver.

5.5 Sediment Sampling

Sediment core samples would be collected from six sediment sampling locations, including two background locations that are interpreted to be upstream of potential impacts (if any) from the former MGP operations. Potential sediment sampling locations SD-1 through SD-6 are shown on Figure 3. The sediment sampling locations would be adjusted, as appropriate (with input from NYSEG and NYSDEC), based on observations during reconnaissance and probing activities. For instance, sediment samples would be collected further from shore if coarse deposits extend from the shoreline to the proposed sampling locations. Core samples would be collected by driving 2- or 3-inch diameter Lexan® tubing into the sediment until refusal. Other sediment sampling equipment (e.g., dredge sampler, slam bar, etc.) would be available should the Lexan® tubing prove ineffective at collecting samples.

It is anticipated that sediment core samples would be collected from 0 to 2 feet below the sediment surface (bss). Each core would be segmented into a surface sample (0 to 2 inches), 2 to 12 inches bss, and 12 to 24 inches bss (or finer increments defined by notable changes in stratigraphy). The surface sample at each location and subsurface samples at up to two locations would be submitted for laboratory analysis. Laboratory analyses to be performed would be determined based on the findings of the soil and groundwater investigation and visual characterization of the sediment cores, but would likely include a some (or all) of the following analyses: PCBs, TCL VOCs (including MTBE), TCL SVOCs, RCRA metals, total cyanide, and total organic carbon (TOC).

Sample jars would be filled with the finer-grained portions of the core segment selected for analysis, noting the relative proportion of gravel and larger aggregates in the core segment.

Representative portions of riverbed material would also be retained for potential grain size analysis. Grain size analyses may be necessary if analytical sediment results suggest that the site may be adversely affecting the Chenango River sediments. If required, analyses would be performed according to ASTM D422.

NYSEG recognizes that additional sampling may be required if the results of the initial phase of sediment sampling suggest that site-related releases have impacted the River sediments. Such additional sampling would be performed as part of this RI so that the nature and extent of potential MGP-related impacts to River sediments would be adequately characterized with this investigation.

6. Human Health Exposure Evaluation

6.1 General

A qualitative human exposure evaluation will be performed as part of the RI to identify and evaluate the significance of potential exposure pathways. Evaluation of the potential vapor intrusion pathway will be performed, if needed, based on the soil and groundwater sampling results. The approach for completing the qualitative human exposure evaluation is presented below, followed by a possible approach for evaluating the potential vapor intrusion pathway.

6.2 Qualitative Human Exposure Evaluation

The qualitative human exposure evaluation will be based on the environmental site setting, available analytical data, and the current and likely future use of the site. The exposure evaluation will identify and evaluate potentially complete exposure pathways, including source and location where exposure could occur, and a feasible route of exposure at the exposure point. Potentially complete exposure pathways (e.g., dermal contact, incidental ingestion of soil, and inhalation) will be identified based on current and likely future land uses. The potential significance of complete exposure pathways will be evaluated by comparing concentrations of constituents of interest in site media to available screening criteria. The screening criteria may include the NYSDEC-recommended soil cleanup objectives presented in the NYSDEC Technical and Administrative Guidance Memorandum entitled," Determination of Soil Cleanup Objectives and Cleanup Levels, HWR-94-4046," (TAGM 4046) dated January 24, 1994, and other criteria as appropriate. The results of the human health exposure evaluation will be summarized in the RI Report and will be utilized, as appropriate, to support conclusions regarding measures potentially needed at the site.

6.3 Vapor Intrusion Pathway Evaluation

Further evaluation of the potential significance of the vapor intrusion pathway may be needed based on the soil and groundwater sampling results. The approach for further evaluation will be determined once future use of the property has been determined by the developer. It is currently anticipated that the evaluation, if needed, would be completed in a phased manner. The initial step would involve a desktop evaluation (screening level assessment) prepared in accordance with the following guidance:

- USEPA's "Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils" (Vapor Intrusion Guidance, November 29, 2002); and

- the Johnson and Ettinger (J&E) model spreadsheets (1991, revised November 2002), taking into consideration some site-specific and exposure-specific information.

If needed, based on the results of the desktop evaluation, soil gas sampling will be performed to determine quantitatively whether constituents of interest are present in soil gas in the vicinity of the site. Soil gas sampling would be performed in accordance with a future work plan to be submitted to the NYSDEC for review and approval. The work plan would identify proposed sampling locations and sampling/analytical procedures to provide conservative data for evaluation purposes. Factors to be taken into consideration in developing the work plan would include:

- the location/depth of the groundwater VOC plume (if any);
- the groundwater flow direction;
- the horizontal and vertical extent of VOC-impacted soils (if any);
- subsurface soil stratigraphy, including the potential presence of confining layers;
- locations of potential preferential pathways, such as underground utility corridors;
- locations of paved areas that could act as a cap to facilitate soil gas migration; and
- locations of existing buildings that are anticipated to remain and proposed locations of new buildings.

Depending on the soil and groundwater investigation results and plans for property redevelopment that are yet to be determined, soil gas sampling locations could potentially be selected as follows:

- in onsite areas where the highest concentrations of VOCs (if any) are identified in soil and groundwater to provide a "worst-case" assessment of potential exposure scenarios;

- in paved areas and near utility corridors that could potentially influence soil gas migration;

- around the perimeter of existing buildings anticipated to remain following site redevelopment (potentially the existing AAA building);

- within the footprint of proposed new buildings;

- around the perimeter of the project area; and/or

- near existing monitoring wells for purposes of identifying correlations between groundwater and soil vapor data (if needed).

Soil gas results would be evaluated using the J&E model spreadsheets. If the incremental risk calculated from the J&E model spreadsheet exceeds a chosen risk level (e.g., $1x10^{-6}$), indoor air sampling may be warranted. It is anticipated that indoor air sampling would be performed, only if needed (and only within buildings to remain following site redevelopment) based on the results of the desktop evaluation and soil gas sampling. Indoor air sampling would be performed in accordance with a work plan (in the form of a letter or e-mail correspondence) submitted to the NYSDEC for review and approval. The work plan would identify proposed indoor air and background ambient air sampling locations, discuss proposed sampling and analytical procedures, and identify the timing (schedule) for implementing the sampling activities. The following actions would also be implemented in connection with the indoor air sampling:

- A building integrity survey would be performed to evaluate the potential for VOCs to enter the building; and

- A building VOC inventory would be performed to identify potential indoor sources of VOCs that could contribute to VOC levels in the building.

Results of the building integrity survey and building VOC inventory would be recorded on the Indoor Air Quality Questionnaire and Building Inventory form included as Attachment A.

Appropriate mitigation measures and monitoring would be identified, as needed, based on the results of the indoor air sampling and building VOC inventory. Alternatively, NYSEG and the developer may identify conservative mitigation measures and a monitoring approach (in lieu of a detailed vapor intrusion evaluation) to address potential concerns, if any, and streamline site redevelopment.

7. Survey, Decontamination, and Waste Handling

7.1 Survey

While completing the RI field work, field personnel will mark all investigation locations. A NYSEG survey team will then survey the marked locations. Horizontal coordinates will be tied to New York State Plane Central (3102) coordinate system (NAD 83). All elevations will be established with respect to the 1929 National Geodetic Vertical Datum (NGVD).

For each soil boring, the surveyor will determine its location and the ground surface elevation. For each monitoring well, the surveyor will determine the location, ground-surface elevation, and measuring-point elevation (defined as the top of the inner casing).

7.2 Decontamination

All equipment will be decontaminated following the procedures outlined in the FSP. In general, all non-disposable equipment, in particular all drilling tools and groundwater-sampling equipment, will be decontaminated prior to first use on site, between each investigation location, and prior to demobilization. The integrity of decontamination will be checked periodically with equipment rinse blanks, as required by the QAPP.

7.3 Waste Handling

All investigation-derived waste (IDW) will be containerized onsite. Soil cuttings, drilling mud (if any), personal protective equipment, spent disposable sampling materials, decontamination water, purged groundwater, and drilling water will be segregated by waste type and placed in DOT-approved 55 gallon steel drums or waste wranglers. All storage vessels will be appropriately labeled with the contents, generator, location, and date. Pursuant to discussions between NYSEG and the NYSDEC, IDW solids generated at the Washington Street site (i.e., soil cuttings, drilling mud, personal protective equipment, etc.) that exhibit no obvious odors, visible staining, sheens, elevated PID readings, or discolorations, and IDW liquids (purge and decontamination water) that exhibit no sheens will be transferred by the drilling subcontractor on a daily basis (at the end of each workday) to the NYSEG Court Street site for temporary storage. IDW will be transported to the NYSEG Court Street site in DOT-approved 55 gallon steel drums or waste wranglers. IDW that exhibits obvious odors, visible staining, sheens, and/or elevated PID readings will be staged onsite at the former Washington Street MGP in an area to be enclosed with construction-type fencing and will be transported offsite for disposal in accordance with applicable rules and regulations in an expeditious manner.

8. Project Schedule and Reporting

8.1 Project Schedule

A detailed schedule identifying work activities to be performed and anticipated timeframe/milestone dates for completion is included as Table 3. As indicated by the attached schedule, there will be a 30-day public comment period on this Work Plan, which is anticipated to run concurrently with the comment period on the BCP application to be submitted by NYSEG. The first phase of the soil investigation will begin within approximately two weeks following NYSDEC approval of the Work Plan, followed by the monitoring well and piezometer installations, groundwater sampling, and water-level measurement. The second phase of the soil investigation will begin following demolition of the Rexel Electric Supply building. The table below summarizes the approximate project schedule. The actual project starting date will be dependent on obtaining property access and NYSDEC approval of this Plan. The project duration will depend largely on whether additional investigation locations are required to meet project objectives due to unforeseen field conditions.

Work Activity	Start Date	Duration
RI Work Plan Approval	February 2005	--
Implement the First Phase of RI Activities	April 2005	6 weeks
Implement the Second Phase of RI Activities	August 2005	3 weeks
Submit RI Report to NYSDEC	November 2005	--

8.2 Reporting

BBL will prepare a RI Report once field activities are completed and laboratory data are received. The report will be prepared in accordance with NYSDEC BCP guidance and the BCA to be executed by the NYSDEC and NYSEG. It is currently anticipated that the text of the RI Report will include a discussion of the following general topics:

- site and project background;
- physical characteristics of the study area (topography and drainage, geology, and hydrogeology);
- field activities completed;
- methodologies used to complete the field activities;
- findings of the field activities;
- understanding of the conceptual site model, including the geologic and hydrogeologic site conditions;
- results of a desktop evaluation to identify the potential significance of the vapor intrusion pathway using the USEPA guidance and Johnson & Ettinger model spreadsheets;
- results of a qualitative human exposure evaluation completed to evaluate potential human exposure pathways for both current and anticipated future site conditions; and
- understanding of the distribution of MGP-related constituents in the media sampled.

The text of the RI Report will be supported by subsurface logs, analytical data summary tables, and figures illustrating site-specific data, including a water-table map and constituent distribution. A data usability summary report will be provided in portable document format (PDF) on a compact disc.

9. References

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Tables

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engineers, scientists, economists

TABLE 1
SUMMARY OF PROPOSED RI FIELD ACTIVITIES & RATIONALE

REMEDIAL INVESTIGATION WORK PLAN
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Location/Activity	Action	Rationale
Soil Boring & Sampling	Soil investigation activities will be conducted in two phases. The first phase will be conducted prior to demolition of the Rexel Electric Supply building, and the second phase will be conducted following demolition. Soil borings will be completed at 16 locations during the first phase and at an additional 5 locations during the second phase. Where feasible, soil borings will first be drilled in potential DNAPL source areas (e.g., former holders) to the depth of a potential confining unit. Should NAPL be encountered in a given soil boring, the DNAPL Contingency Plan (Appendix A) will be followed to mitigate potential drag-down of NAPL. If NAPL is encountered inside gas holders for a given soil boring, a second soil boring will be drilled immediately outside of the holder wall. Continuously collect soil samples at each soil boring location using a 2-foot long, 2-inch outside diameter, split-spoon sampling device (or a 4-foot long, 1.5-inch inside diameter macro-core sampling device if direct-push techniques are used). Soil recovered at each 2-foot depth interval will be visually characterized (for color, texture, and moisture content) and will undergo headspace screening using a PID. The presence of visible staining, NAPL, and obvious odors encountered in the soil will be noted. Submit up to two samples from each boring, based on visual characterization and PID headspace screening results, for laboratory analysis. For borings where visible staining, NAPL, obvious odors, or elevated PID readings are identified, one sample from the "worst-case" sampling interval and a second sample from the first apparent "clean" interval underlying the impacted materials will be submitted for laboratory analysis; for borings where no visible staining, NAPL, obvious odors, or elevated PID readings are identified, one sample from the first interval (0 to 6-inches) of material below surface coverings (asphalt/sub-base) and a second sample from the 2-foot interval directly above the water table will be submitted for laboratory analysis.	A phased investigation approach will allow activities to begin sooner than if investigation was delayed until after demolition activities. Additionally, results of the first phase of soil sampling can be used to focus the second phase of investigation activities. Observations made while drilling the borings will be used in developing the site conceptual model.

TABLE 1
SUMMARY OF PROPOSED RI FIELD ACTIVITIES & RATIONALE

REMEDIAL INVESTIGATION WORK PLAN
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Location/Activity	Action	Rationale
Soil Boring & Sampling (cont'd)	Soil samples will be analyzed as indicated below and summarized in Table 2: - Soil samples collected from two of the three soil borings within each former holder (borings SB-1 and SB-3 in the eastern holder and borings SB-17 and SB-19 in the western holder) will be submitted for laboratory analysis for BTEX compounds (USEPA SW-846 Method 8260), PAHs (USEPA SW-846 Method 8270), and total cyanide (USEPA SW-846 Method 9010); and - Soil samples collected from the third boring location within each former holder and all boring locations outside the holders will be submitted for laboratory analysis for TCL VOCs (plus MTBE) using USEPA SW-846 Method 8260), TCL SVOCs using USEPA SW-846 Method 8270, the 8 RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) using USEPA SW-846 Method 6010/7471, and total cyanide using USEPA SW-846 Method 9010. - Soil samples collected from three soil borings (one sample per boring from visibly impacted soils) will be analyzed for TCLP benzene, reactivity (reactive cyanide and reactive sulfide), total sulfur, and flashpoint (USEPA SW-846 test methods). It is currently anticipated that the soil samples to be analyzed for these parameters will be collected from borings SB-3, SB-19, and SB-21. Additional locations will be identified, as appropriate, based on field conditions encountered. - Soil samples collected from up to five soil borings (potentially borings SB-3, SB-7, SB-10, SB-19, and SB-21) will be submitted for laboratory analysis for PCBs using USEPA SW-846 Method 8082. Alternate locations will be identified, as appropriate, based on field conditions encountered.	Considering that there have been other previous site uses and potential sources besides the former MGP, the majority of the soil samples designated for laboratory analysis (approximately 90%) will be analyzed for a comprehensive list of potential constituents of interest. The remaining 10% of the samples (selected samples collected directly from the footprint of the former MGP operations) will undergo analysis for a more focused list of constituents typically associated MGP residues. Soil samples from three or more borings will also be analyzed for additional parameters (TCLP benzene and selected other RCRA characteristics) to evaluate whether soils near the BCP project area, if excavated, may meet the definition of a RCRA hazardous waste. Selected soil samples will also be analyzed for PCBs to evaluate the potential presence and extent of PCBs in soil at the site. Analytical results will be compared to applicable regulatory criteria.

TABLE 1
SUMMARY OF PROPOSED RI FIELD ACTIVITIES & RATIONALE

REMEDIAL INVESTIGATION WORK PLAN
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Location/Activity	Action	Rationale
Test Pit Excavation and Soil Sampling	Excavate test pits using a rubber-tired backhoe during the second phase of the RI, only if it is determined that site remediation will not occur for an extended period of time (otherwise test pits will be excavated in connection with site remediation). Test pits will be excavated in the vicinity of the former MGP structures and along the western edge of the MGP site. Test pit locations will be determined based on results of the Phase I soil boring and sampling activities. Test pits will be excavated to the water table, the reach of the backhoe, or to the depth of subsurface obstructions, whichever is shallower. Collect subsurface soil samples at approximately two-foot depth intervals within each pit for visual characterization and headspace screening using a PID. The presence of visible discoloration, NAPL, and/or obvious odors encountered in the soil will also be noted. If needed, submit one or more samples from each test pit for laboratory analysis. The potential need for laboratory analysis of samples from the test pits will be discussed with NYSEG and then the NYSDEC. Following excavation and sampling, backfill the test pits with the material removed from the pits.	The pits would be excavated to evaluate remaining subsurface construction materials associated with former MGP structures, their condition, and the presence of MGP-related impacts associated with the structures. The pits will also be used to observe the subsurface material along the western area of the site. Test pits will allow better identification of the structures by exposing a large amount of subsurface soil (as opposed to soil borings). Test pits will also provide a better indication of the nature of the native and fill materials.
Groundwater Monitoring Well Installation and Sampling	Install five new onsite overburden water-table monitoring wells and up to three new deep overburden monitoring wells. The five new water-table groundwater monitoring wells will be installed at locations MW-4 through MW-8, as shown on Figure 2. Locations for the deep overburden monitoring wells will be determined based on observations made during the drilling and sampling of soil borings. Drill well borings using hollow-stem augers. Soil samples will be collected continuously at each location from grade to the total depth of well using 2-foot long, 2-inch outside diameter split-spoon samplers. Soil recovered from each sample interval will be visually characterized for color, texture, and moisture content. The presence of visible staining, NAPL, and obvious odors encountered in the soil will be noted.	Wells will be installed to further evaluate subsurface geologic and hydrogeologic conditions and groundwater water quality. Wells will be installed following completion of the soil investigation during the initial Phase of the RI. Well locations, would be adjusted, as needed, based on observations made during the soil investigation. Analytical results will be used to better understand the presence and level of MGP-related constituents or other constituents in groundwater at and downgradient of the former MGP site.

TABLE 1
SUMMARY OF PROPOSED RI FIELD ACTIVITIES & RATIONALE

REMEDIAL INVESTIGATION WORK PLAN
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Location/Activity	Action	Rationale
Groundwater Monitoring Well Installation and Sampling (cont'd)	Groundwater monitoring wells will be constructed of two-inch diameter, schedule 40 PVC well material with 0.010-inch or 0.020-inch slotted well screens, depending upon the formation. A larger well screen slot size will be provided, as appropriate, if NAPL is encountered during drilling. Well screen lengths will be determined based on observations made during the drilling of the soil boring for each well. Each well will be equipped with a 2-foot long grouted sump and finished with a flush mounted curb-box.	A larger well screen slot size would be provided, as appropriate, to capture NAPL encountered during drilling. However, a well screen slot size of greater than 0.020 inches may not be appropriate as a larger size could become plugged with fine-grained materials.
	Develop each new and existing groundwater monitoring well by surging/purging using a positive displacement pump and dedicated polyethylene tubing. A surge block will also be used to surge and develop the wells. Development will continue until the water removed from the wells is reasonably free of visible sediment (50 NTUs) or until turbidity level stabilize.	Well development will enhance the hydraulic connection between the well screen and the surrounding geologic formation and remove fine sediment from the well screen and sand pack.
	Use low-flow sampling techniques to collect groundwater samples from the new and existing groundwater monitoring wells for laboratory analysis for PCBs, TCL SVOCs, RCRA metals, and total cyanide. Use dedicated disposable bailers to collect groundwater samples from the wells for laboratory analysis for TCL VOCs (plus MTBE) (to minimize the loss of VOCs through peristaltic pumping agitation). Conduct specific-capacity tests at the each of the groundwater monitoring wells as they are sampled using low-flow methods.	"Low-flow" sampling has important advantages over other sampling methods: - Very low turbidity samples, which can reduce sampling artifacts for PAHs; - Hydraulic conductivity (specific capacity) tests and well purging can be conducted simultaneously; and - The volume of purge water is minimized.
	Monitor pH, conductivity, dissolved oxygen, temperature, and turbidity during sampling.	Specific capacity test data will be used to estimate the hydraulic conductivity of the saturated material screened by the temporary wells.

TABLE 1
SUMMARY OF PROPOSED RI FIELD ACTIVITIES & RATIONALE

REMEDIAL INVESTIGATION WORK PLAN
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Location/Activity	Action	Rationale
Piezometer Installation	Install a 1-inch diameter PVC piezometer (PZ-1) at the location shown on Figure 2.	Provide data to help further evaluate groundwater flow patterns near the former MGP site that are likely to be influenced by the nearby Susquehanna River.
Water-Level Measurement	Obtain a synoptic round of water- level measurements from the existing and new permanent monitoring wells and piezometer.	Hydraulic head data will be used to depict the general configuration of the water table and develop a preliminary assessment of shallow groundwater flow patterns at the site.
Chenango River Sediment Probing and Sampling (if Needed)	Perform a reconnaissance by walking the Chenango River from the confluence with the Susquehanna River to approximately 750 feet upstream of the confluence. Record observations regarding river characteristics, the extent of deposition of fine-grained riverbed materials, the presence of sheens/odors, discharge pipes, etc. Systematically probe along transects established at 50-foot intervals along an approximately 600 foot section of the river. Probing would be performed along each transect at distances of approximately 5 feet, 20 feet, 40 feet, and 60 feet from the eastern shoreline. Additional probing will be performed, as appropriate, near outfall pipes and in areas where soft deposits are identified. Additional probing will also be performed in areas where a sheen is observed (only if the sheen is not suspected to be the result of decaying natural organic material) to attempt to define the extent of the sheen. Measure and record the depth of water and sediment thickness at each probing location. Also note the presence of any NAPL or sheen when the riverbed is disturbed. Collect sediment cores from an anticipated six locations, including two background locations that are interpreted to be upstream of potential impacts (if any) from the former MGP site. Samples will be collected by driving 2- or 3-inch diameter Lexan® tubing into the sediment until refusal. Other sediment sampling equipment (e.g., dredge sampler, slam bar, etc.) will be available should the Lexan® tubing prove to be ineffective for sample collection. Segment the recovered sediment in intervals of 0- to 2-inches, 2- to 12-inches, and 12- to 24-inches (or increments defined by notable changes in stratigraphy).	The reconnaissance will be used to obtain a better understanding of river characteristics and hydraulics. This information, together with the probing data, will be used to select meaningful sediment sampling locations, including those for background. Sampling locations will be determined with input from NYSEG and the NYSDEC. The purpose of the sampling program is to assess the presence and level of MGP-related constituents and other constituents in sediments. The reconnaissance and sediment probing/sampling will be performed if warranted by results of other fieldwork (i.e., soil and groundwater investigation) at the site.

TABLE 1
SUMMARY OF PROPOSED RI FIELD ACTIVITIES & RATIONALE

REMEDIAL INVESTIGATION WORK PLAN
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Location/Activity	Action	Rationale
Chenango River Sediment Probing and Sampling (if Needed)	Log any stratigraphic changes and the presence of potential MGP-related impacts based on visual or olfactory indications. Analyze the uppermost interval (0- to 2-inches) from each core and subsurface intervals from up to two cores. Laboratory analyses will be determined based on the findings of the soil and groundwater investigation and visual characterization of the cores. Laboratory analysis will likely include some (or all) of the following: PCBs, TCL VOCs (including MTBE), TCL SVOCs, RCRA metals, total cyanide, and TOC from each core. Retain the remaining segments for potential future analysis if warranted based on elevated constituent levels noted in the sample above and/or visual/olfactory indications. Representative portions of streambed material may be retained for potential grain size analyses. Grain size analyses would be warranted if results of the fieldwork discussed above indicate that the site appears to be adversely affecting river sediments.	(see above)

TABLE 2
SUMMARY OF PROPOSED RI SAMPLING LOCATIONS & LABORATORY ANALYSES

REMEDIAL INVESTIGATION WORK PLAN
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Proposed Sample ID	Proposed Sampling Location	Proposed Laboratory Analyses							Total Number of Samples
		BTEX	PAHs	Total Cyanide	VOCs/ SVOCs	RCRA Metals	PCBs	TOC	
Proposed Soil Samples									
Proposed Soil Samples to be Collected During the First Phase of Soil Investigation									
SB-1	**Former Holder #1 Footprint**	✔	✔	✔					2
SB-2				✔	✔	✔			2
SB-3		✔	✔	✔			✔		2
SB-4	West of the Former Purfiers			✔	✔	✔			2
SB-5	Former Purifier Footprint			✔	✔	✔			2
SB-6	Former Super Heaters Footprint			✔	✔	✔			2
SB-7	Former Storage Shed Footprint			✔	✔	✔	✔		2
SB-8	East of Former Holder #1			✔	✔	✔			2
SB-9	Southwest of Former Holder #2			✔	✔	✔			2
SB-10	South of Former Holder #1			✔	✔	✔	✔		2
SB-11	North of the Former Purifiers			✔	✔	✔			2
SB-12	Former Storage Shed Footprint			✔	✔	✔			2
SB-13	South of Former Holder #2			✔	✔	✔			2
SB-14	South of the Former MGP Property			✔	✔	✔			2
SB-15				✔	✔	✔			2
SB-16				✔	✔	✔			2
Proposed Soil Samples to be Collected During the Second Phase of Soil Investigation									
SB-17	Former Holder #2 Footprint	✔	✔	✔					2
SB-18				✔	✔	✔			2
SB-19		✔	✔	✔			✔		2
SB-20	**West of Former Holder #2**			✔	✔	✔			2
SB-21				✔	✔	✔	✔		2
SB-22	Along the Western Property Boundary			✔	✔	✔			2
SB-23				✔	✔	✔			2
Proposed Groundwater Samples									
MW-1	South of Former Super Heaters			✔	✔	✔	✔		1
MW-2	Along the Eastern Property Boundary			✔	✔	✔	✔		1
MW-3	South of the Former Holders			✔	✔	✔	✔		1
MW-4	North of the Former MGP Property			✔	✔	✔	✔		1
MW-5	Along the Western Property Boundary			✔	✔	✔	✔		1
MW-6	Southwest of Former Holder #2			✔	✔	✔	✔		1
MW-7	South of the Former MGP Property			✔	✔	✔	✔		1
MW-8	North of the Former MGP Property			✔	✔	✔	✔		1
MW-9	At Locations to be Determined by Observations Made During Soil Boring Activities			✔	✔	✔	✔		1
MW-10				✔	✔	✔	✔		1
MW-11				✔	✔	✔	✔		1
Possible Sediment Samples (Refer to Note #8)									
SD-1	**Chenango River**	✔	✔					✔	1
SD-2				✔	✔	✔	✔	✔	1
SD-3		✔	✔					✔	1
SD-4				✔	✔	✔	✔	✔	1
SD-5		✔	✔					✔	1
SD-6				✔	✔	✔	✔	✔	1

2/15/2005
P:\MBG\2005\04050842_Tables 2-3.xls

TABLE 2
SUMMARY OF PROPOSED RI SAMPLING LOCATIONS & LABORATORY ANALYSES

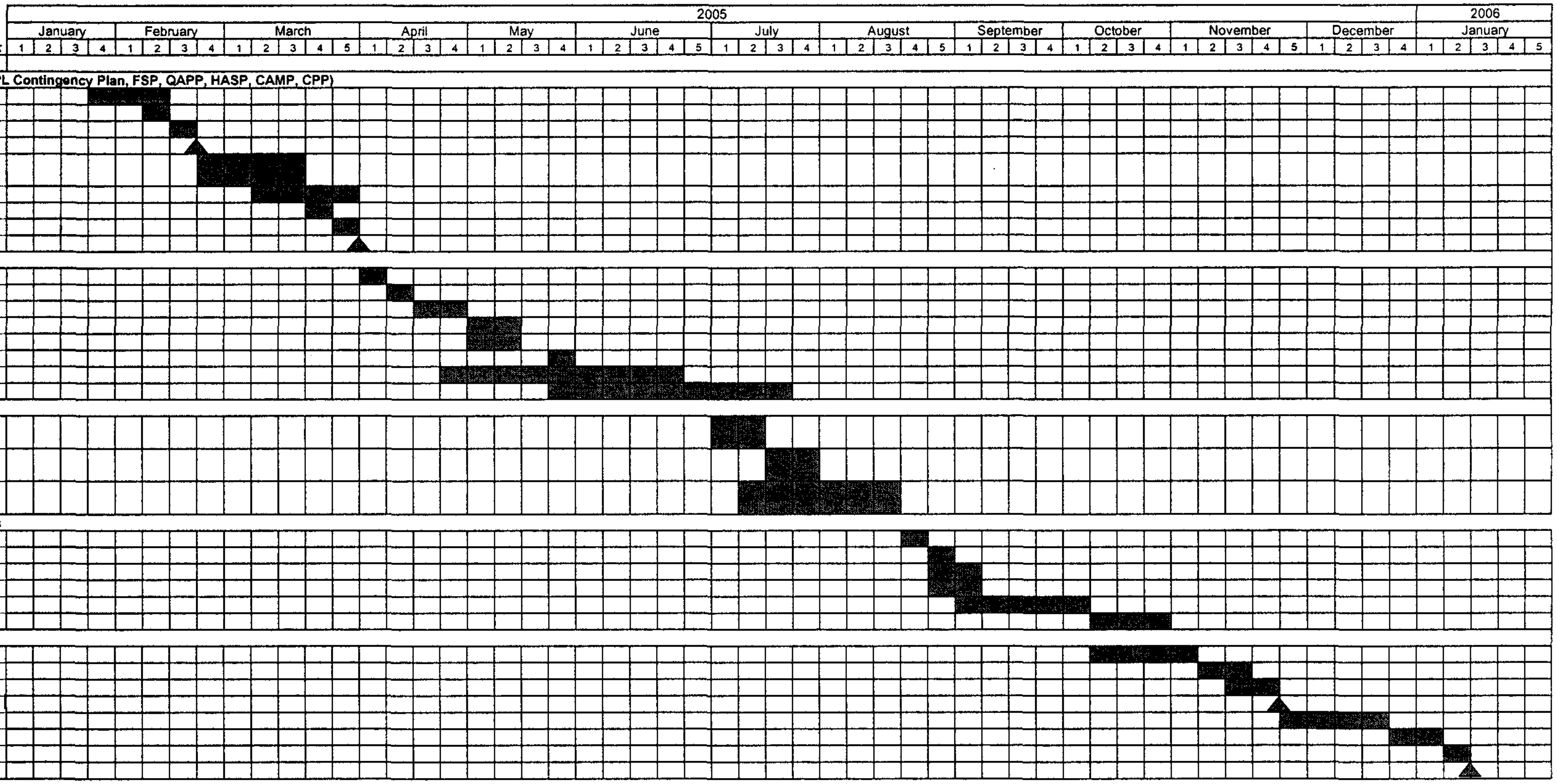
REMEDIAL INVESTIGATION WORK PLAN
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Notes:

1. All proposed soil boring, monitoring well, and sediment sampling locations are approximate.
2. Soillsediment sampling depths and locations will be adjusted, as appropriate, based on field observations (e.g., obstructions, staining) and elevated photoionization detector (PID) headspace screening results, if encountered.
3. Samples to be submitted for laboratory analysis for one or more of the following constituents, as indicated above:
   - Benzene. toluene, ethylene, xylene (BTEX compounds) using USEPA SW-846 Method 8260;
   - Polycyclic aromatic hydrocarbons (PAHs) using USEPA SW-846 Method 8270;
   - Total cyanide using USEPA SW-846 Method 9010;
   - Volatile organic compounds (VOCs), including methyl-tert butyl ether (MTBE), using USEPA SW-846 Method 8260;
   - Semi-volatile organic compounds (SVOCs) using USEPA SW-846 Method 8270;
   - 8 RCRA metals using SW-846 Method 6010/7470/7471;
   - Polychlorinated biphenyls (PCBs) using United States Environmental Protection Agency (USEPA) SW-846 Method 8082 (unfiltered for groundwater); and
   - Total organic carbon (TOC) using Lloyd Kahn Method.
4. In addition to the samples and analyses identified in the table above, up to three soil samples (one sample per boring from visibly impacted soils) will be submitted for laboratory analysis for Toxicity Characteristic Leaching Procedure (TCLP) benzene, reactivity (reactive cyanide and reactive sulfide), total sulfur, and flashpoint (USEPA SW-846 test methods) to evaluate whether soils, if excavated, may meet the definition of a RCRA hazardous waste.
5. It is assumed that existing monitoring wells MW-1, MW-2, and MW-3 may be appropriate for use in the investigation. The condition of the wells will be evaluated at the start of the groundwater investigation, and the wells will be repaired or replaced, if warranted.
6. Five new water-table groundwater monitoring wells (monitoring wells MW-4 through MW-8) will be installed as part of the investigation activities.
7. Up to three new deep overburden groundwater monitoring wells (monitoring wells MW-9 through MW-11) will be installed as part of the investigation activities.
8. Sediment investigation activities may be performed, if warranted based on the results of soil and groundwater investigation activities.
9. In addition to the samples and analyses identified in the table above, up to two sediment core samples from below the 0- to 6-inch interval will be submitted for laboratory analysis for BTEX. PAHs, and TOC, as appropriate based on visual characterization.

TABLE 3
PROJECT SCHEDULE

REMEDIAL INVESTIGATION WORK PLAN
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK



Activity
RI Work Plan & Supporting Documents (DNAPL Contingency Plan, FSP, QAPP, HASP, CAMP, CPP)
Prepare Plans
NYSEG Review of Plans
Revise Plans
Submit Plans to NYSDEC
NYSDEC Review of Plans/30-Day Public Comment
Prepare/Execute Access Agreements
Respond to NYSDEC Comments
NYSDEC Review of Response
NYSDEC Approval
Implement First Phase of RI Field Activities
Kickoff Meeting/Field Reconnaissance
Mobilization
Soil Investigation
Groundwater Monitoring Well Installation
Well Development
Groundwater Sampling
Laboratory Analysis
Data Validation
Pre-Second Phase RI Work Activities
Desk-Top Evaluation of Potential Vapor Intrusion Pathway
Prepare Soil Gas Investigation Work Plan (if needed)
Rexel Building Decommissioning & Demolition
Implement Second Phase of RI Field Activities
Field Reconnaissance
Mobilization
Additional Soil Investigation
Soil Gas Investigation (if needed)
Laboratory Analysis
Data Validation
RI Report
Prepare RI Report
NYSEG Review of Report
Revise Report
Submit Final Report to NYSDEC
NYSDEC Review of Report
Respond to NYSDEC Comments
NYSDEC Review of Comment-Response
Report Approval

Notes:
1. Schedule is dependent on timeframe for NYSDEC review/approval of RI Work Plan
2. Schedule is dependent on conditions encountered during implementation of the field activities.
3. Schedule assumes limited additional soil and sediment sampling activities, if needed, can be performed during implementation of the first and second phase of RI field activities.
4. Schedule assumes the 30-day public comment period on the RI Work Plan will be concurrent with NYSDEC review of the plan.

Figures

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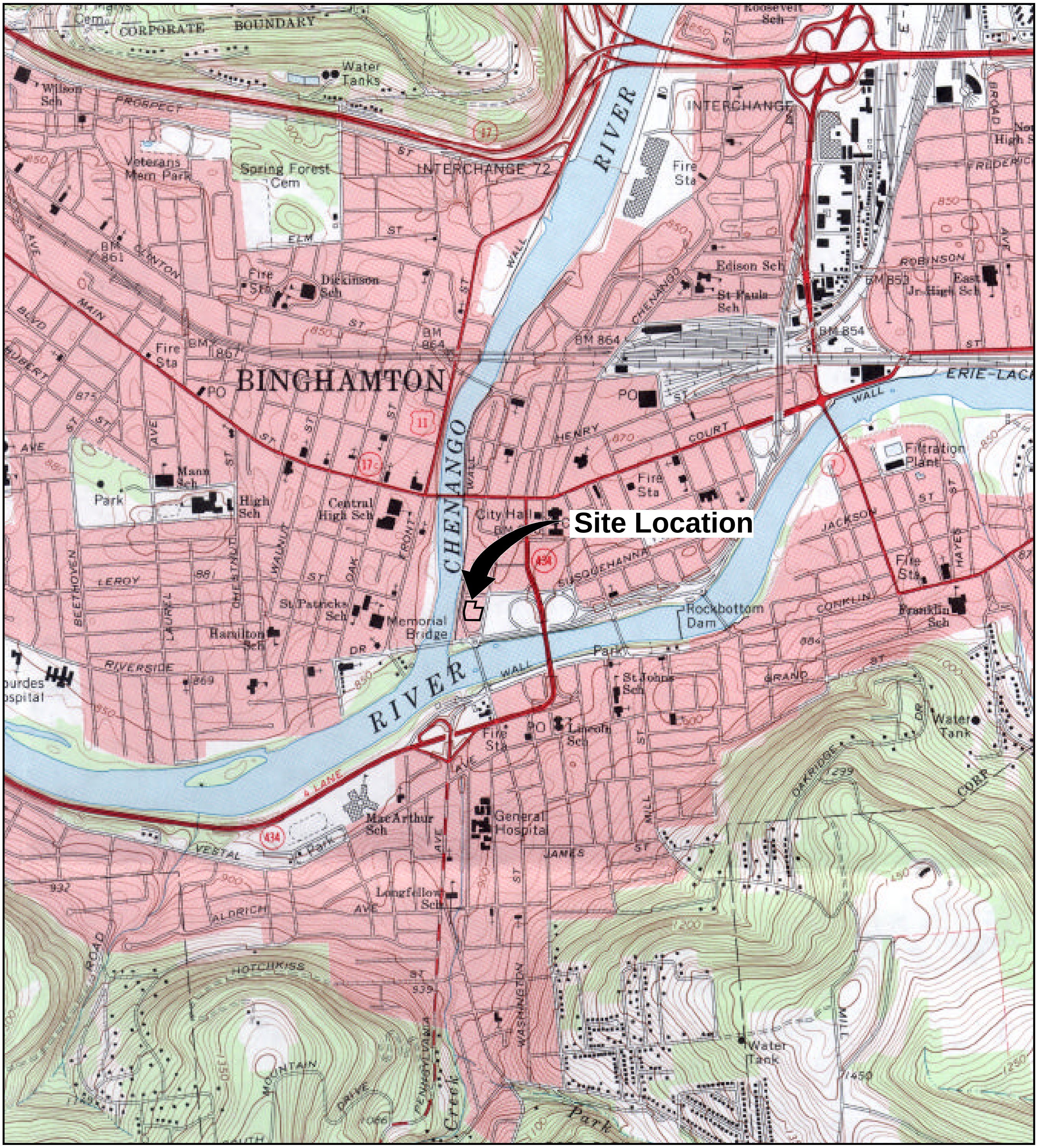
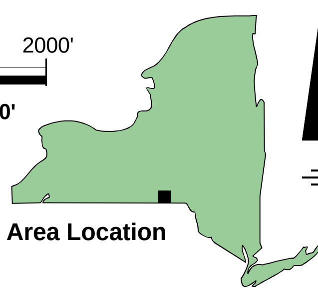


REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., BINGHAMTON, NY, 1968, PHOTOINSPECTED 1976.

2000' 0 2000'

Approximate Scale: 1" = 2000'



Area Location

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION

SITE LOCATION MAP

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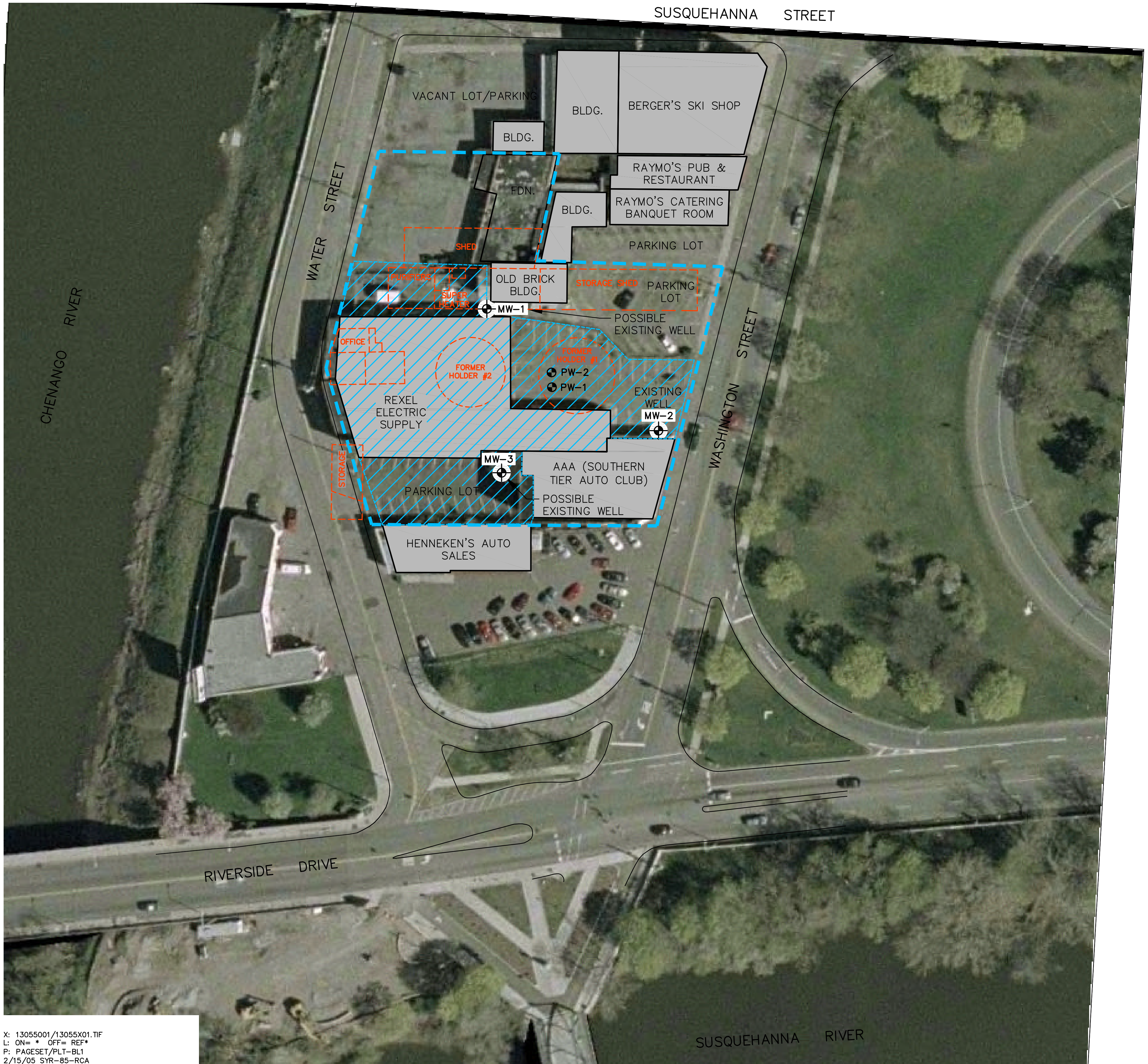
FIGURE
1

02/07/05 SYR-D85-DJH
13055002/13055n01.cdr



X: 13055001/13055X01.TIF
L: ON= * OFF= REF*
P: PAGESET/PLT-BL1
2/15/05 SYR-85-RCA
13055001/13055B09.DWG

LEGEND:

- FORMER WASHINGTON STREET MGP PROPERTY
- PORTION OF PROPOSED BROWNFIELD REDEVELOPMENT AREA
- EXISTING BUILDING
- APPROXIMATE LOCATION OF EXISTING MONITORING WELL
- APPROXIMATE LOCATION OF FORMER TEMPORARY MONITORING WELL (ABANDONED)
- FORMER MGP-RELATED STRUCTURE

NOTE:

1. DRAWING PREPARED BY DIGITIZING INFORMATION FROM PAPER COPY OF CITY OF BINGHAMTON TAX MAP PROVIDED BY NYSEG. BUILDING AND FORMER HOLDER LOCATIONS WERE DIGITIZED FROM PAPER COPIES OF "SANBORN" MAPS DATED 1887 AND 1970, AT AN APPROXIMATE SCALE OF 1"=50'. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL BACKGROUND IMAGE DOWNLOADED FROM "NEW YORK STATE GIS CLEARINGHOUSE WEBPAGE (WWW.NYGIS.STATE.NY.US)" DATED APRIL, 2002. AERIAL IS NOT GEOREFERENCED AND SCALE IS APPROXIMATE.
3. APPROXIMATE LOCATIONS OF FORMER TANK PIT MONITORING WELLS PW-1 AND PW-2 DIGITIZED FROM A PAPER COPY OF FIGURE MADE BY "DUNN GEOSCIENTIFIC CORP." TITLED "GROUNDWATER ELEVATIONS" FIGURE 3, DATED 5/5/91, AT AN APPROXIMATE SCALE OF 1"=50'.

0 80' 160'

APPROXIMATE GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

REMEDIAL INVESTIGATION

SITE LAYOUT MAP

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FIGURE **2**

LEGEND:

- PROPOSED PRE-DEMOLITION RI SOIL BORING LOCATION
- PROPOSED POST-DEMOLITION RI SOIL BORING LOCATION
- PROPOSED MONITORING WELL LOCATION
- PROPOSED PIEZOMETER LOCATION
- APPROXIMATE LOCATION OF EXISTING MONITORING WELL
- APPROXIMATE LOCATION OF FORMER TEMPORARY MONITORING WELL (ABANDONED)
- FORMER WASHINGTON STREET MGP PROPERTY
- PORTION OF PROPOSED BROWNFIELD REDEVELOPMENT AREA
- EXISTING BUILDING
- FORMER MGP-RELATED STRUCTURE
- T1 POTENTIAL SEDIMENT TRANSECT LINES (IF NEEDED)
- POTENTIAL SEDIMENT PROBING LOCATION (IF NEEDED)
- POTENTIAL SEDIMENT PROBING & CORE SAMPLING LOCATION (IF NEEDED)

NOTES:

1. DRAWING PREPARED BY DIGITIZING INFORMATION FROM PAPER COPY OF CITY OF BINGHAMTOM TAX MAP PROVIDED BY NYSEG. BUILDING AND FORMER HOLDER AND MGP-RELATED STRUCTURES LOCATIONS WERE DIGITIZED FROM PAPER COPIES OF "SANBORN" MAPS DATED 1887 AND 1970, AT AN APPROXIMATE SCALE OF 1"=50'. ALL LOCATIONS ARE APPROXIMATE.
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0 80' 160'

APPROXIMATE GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

REMEDIAL INVESTIGATION

PROPOSED SAMPLING LOCATIONS

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FIGURE 3

X: (NONE)
L: ON=* OFF= REF*
P: PAGESET/PLT-BL1
2/15/05 SYR-85-RCA
13055001/13055B08.DWG

Attachment A

Indoor Air Quality Questionnaire and Building Inventory Form

BLASLAND, BOUCK & LEE, INC.
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NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each building involved in indoor air testing.

Preparer's Name ____________________________________ Date______________Time ______________

Preparer's Affiliation ________________________________ Phone No.________________

1. OCCUPANT:

Interviewed: Y / N

Last Name: _________________________ First Name: _________________________

Address: ____

County: _________________

Home Phone: ____________________ Office Phone: ____________________

Number of Occupants/persons at this location _______ Age of Occupants ______________________

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _________________________ First Name: _________________________

Address: ____

County: _________________

Home Phone: ____________________ Office Phone: ____________________

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-Use
Industrial	Church	Other: _________________

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_______________

If multiple units, how many? ________

If the property is commercial, type?

Business Type(s) _____________________________________

Does it include residences (i.e. multi-use)? Y / N   If yes, how many? ______

Other characteristics:

Number of floors______   Building age______

Is the building insulated? Y / N   How air tight? Tight / Average / Not Tight

4. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other ________
c. Basement floor:	concrete	dirt	stone	other ________
d. Basement floor:	uncovered	covered	covered with _______________	
e. Concrete floor:	unsealed	sealed	sealed with ________________	
f. Foundation walls:	poured	block	stone	other ________
g. Foundation walls:	unsealed	sealed	sealed with ________________	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	

j. Sump present? Y / N

k. Water in sump? Y / N / not applicable

Basement/Lowest level depth below grade: ________ (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

---

5. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building:

Hot air circulation	Heat pump	Hot water baseboard
Kerosene Heater	Stream radiation	Radiant floor
Electric baseboard	Wood stove	Other ____________

The type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Hot water tank fueled by: ____________________________

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other ________
Air Conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork in the basement including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

---

6. OCCUPANCY

Basement / lowest level occupancy?

Full time Occasionally Seldom Almost Never

Level	**General Use of Each Floor** (e.g., family/playroom, bedroom, laundry, workshop, storage, office)
Basement	___________________________
1st Floor	___________________________
2nd Floor	___________________________
3rd Floor	___________________________
4th Floor	___________________________

7. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage?	Y / N	
b. Does the garage have a separate heating unit?	Y / N / NA	
c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car etc.)	Y / N / NA	Please specify ____________
d. Has the building ever had a fire?	Y / N	When? ____________
e. Is there a kerosene heater present?	Y / N	Where? ____________
f. Is there a workshop or hobby/craft area?	Y / N	Where & Type? ____________
g. Is there smoking in the building?	Y / N	How frequently? ____________
h. Have cleaning products been used recently?	Y / N	When & Type? ____________
i. Have cosmetic products been used recently?	Y / N	When & Type? ____________
j. Has painting/staining been done in the last 6 months?	Y / N	Where & When? ____________
k. Is there new carpet, drapes or other textiles?	Y / N	Where & When? ____________
l. Have air fresheners been used recently?	Y / N	When & Type? ____________
m. Is there a kitchen exhaust fan?	Y / N	If yes, where vented? ____________
n. Is there a clothes dryer?	Y / N	If yes, is it vented outside? Y / N
o. Has there been a pesticide application?	Y / N	When & Type? ____________

Are there odors in the building? Y / N

If yes, please describe: ____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, automechanic or autobody shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist etc.)

If yes, what types of solvents are used? ____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N

Date of Installation: _____________

8. WATER AND SEWAGE

Water Supply: Public Water Drilled Well Driven Well Dug Well Other: _______

Sewage Disposal: Public Sewer Septic Tank Leach Field Other: ____________________

9. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: ____________________________________

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

10. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

First Floor:

11. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

12. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ______________________________________

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

Appendix A

DNAPL Contingency Plan

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

DNAPL Contingency Plan

Remedial Investigation

Washington Street Former MGP Site Binghamton, New York

New York State Electric & Gas Corporation
Binghamton, New York

February 2005

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

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1.1 Scope and Application

This document has been prepared to guide drilling activities at sites where there is a reasonable expectation that dense, non-aqueous phase liquids (DNAPLs) may be present, and provide procedures to be implemented in the event that DNAPL is encountered during subsurface investigations. These procedures are proposed to limit the potential of remobilizing DNAPL, if any, in response to drilling and sampling activities. In addition, the procedures are designed to optimize the recovery of encountered DNAPL (if any) in a safe and efficient manner. This DNAPL Contingency Plan was developed based on a similar document prepared by DNAPL expert Bernard H. Kueper, Ph.D., P.Eng., of Queens University, for an EPA Region 1 Superfund Site (Kueper, May 1995).

Downward DNAPL mobilization from one strata in the overburden to another, or from overburden into the bedrock may occur in response to drilling activities (short-circuiting along drill stem and/or completed well screen) and groundwater extraction (creation of downward hydraulic gradient in excess of previously measured downward gradients). This DNAPL Contingency Plan addresses drilling-related issues.

1.2 Personnel Qualifications

DNAPL contingency field activities will be performed by persons who have been trained in proper drilling and well-installation procedures under the guidance of an experienced field geologist, engineer, or technician.

1.3 Equipment List

The following materials will be available during soil boring and monitoring well installation activities, as required:

- Work Plan, Field Sampling Plan (FSP), and site Health and Safety Plan (HASP);
- personal protective equipment (PPE) as required by the HASP;
- equipment specified under drilling and well installation SOPs;
- hydrophobic dye (Oil Red O or Sudan IV), pertinent at chlorinated solvent sites;
- disposable polyethylene pans for performing soil-water pan tests; and
- clean, empty jars for performing soil-water shake tests.

1.4 Cautions

The presence or absence of DNAPLs at a site can have significant implications in terms of site management, health and safety, and the feasibility of potential remedial alternatives. Therefore, field personnel must be attentive to the potential for DNAPL, recognize when DNAPL is encountered during drilling, and accurately document field observations indicating the presence of DNAPL and interpreted DNAPL depth. In addition, opportunities to characterize DNAPL, when present may be rare. When practicable, DNAPL samples should be collected an analyzed for physical and chemical characteristics.

1.5 Health and Safety Considerations

Field activities associated with this DNAPL Contingency Plan will be performed in accordance with a site-specific Health and Safety Plan, a copy of which will be present on site during such activities.

1.6 Procedure

<u>DNAPL Screening Procedure During Overburden Drilling</u>

To screen for the potential presence of DNAPL in soil, drilling procedures must allow for high quality porous media samples to be taken. Split-spoon samples or direct-push samplers should be taken continuously in 2-foot intervals ahead of the auger or drill casing. Upon opening each split-spoon sampler or direct-push plastic liner sleeve, the soil will immediately be screened for the presence of organic vapors using a portable photoionization detector (PID) or organic vapor analyzer (OVA). During screening, the soil will be split open using a clean spatula or knife and the PID or OVA probe will be placed in the opening and covered with a gloved hand. Such readings will be obtained along the entire length of the sample.

If the PID or OVA examination reveals the presence of organic vapors above 100 ppm, the sample will undergo further detailed evaluation for visible NAPL. The assessment for NAPL will include a combination of the following tests/observations.

- Evvaluation for visible NAPL sheen or free-phase NAPL in soil sampler – The NAPL sheen will be a colorful iridescent appearance on the soil sample. NAPL may also appear as droplets or continuous accumulations of liquid with a color typically ranging from yellow to brown to black, depending on the type of NAPL. Creosote DNAPLs associated with wood-treating sites and coal tar DNAPLs associated with manufactured gas plant (MGP) sites are typically black and have a characteristic, pungent odor. Pure chlorinated solvents may be colorless in the absence of hydrophobic dye. Solvents mixed with oils may appear brown.

- Soil-water pan test – A portion of the selected soil interval with the highest PID or OVA reading > 100 ppm will be placed in disposable polyethylene dish, along with a small volume of potable or distilled water. The dish will be gently tilted back and forth to mix the soil and water, and the surface of the water will be viewed in natural light to observe the development of a sheen, if any. A small quantity of Oil Red O or Sudan IV hydrophobic dye powder will be added, and the soil and dye will be manually mixed and smeared in the dish to create a paste-like consistency using a new nitrile glove-covered hand for approximately 30 to 60 seconds. A positive test result will be indicated by a sheen on the surface of the water and/or a bright red color imparted to the soil following mixing with dye.

- Soil-water shake test – A small quantity of soil (up to 15 cc) will be placed in a clear, colorless, 40 mL vial containing an equal volume of potable or distilled water. After the soil settles into the water, the surface of the water will be evaluated for a visible sheen. The jar will be closed and gently shaken for approximately 10 to 20 seconds. Again, the surface of the water will be evaluated for a visible sheen or else a temporary layer of foam. A small quantity (approximately 0.5 to 1 cc) of Oil Red O or Sudan IV powder will be placed in the jar. The sheen layer will be evaluated for reaction with the dye (change to bright red color). The jar will be closed and gently shaken approximately 10 to 20 seconds. The contents in the closed jar will be examined for visible bright red-dyed liquid inside the jar. A positive test result will be indicated by the presence of a visible sheen and foam on the surface of water, a reaction between the dye and the sheen layer upon first addition of the dye powder, a bright red coating the inside of the vial, particularly above the water line, or red-dyed droplets within the soil.

- Estimation of Relative Degree of NAPL Saturation – When NAPL is interpreted as present in a particular portion of soil, the field geologist will attempt to estimate the relative degree of NAPL saturation in the soil. Specifically, an interpretation will be made as to whether the observed NAPL is pooled (continuous section of soil in which the pore spaces are filled with a mixture of NAPL and water) or residual (isolated droplets or blebs of NAPL, surrounded by pore spaces containing only water).

If NAPL is obviously present upon opening the soil sampler or evaluating the soil sample within the split spoon sampler or direct-push liner sleeve, it is not necessary to perform a soil-water pan test or soil-water shake test. In addition, it is not necessary to perform both a soil water pan test and a soil-water shake test. Either test method is acceptable. The pan test may be preferred in some circumstances because the presence of a sheen may be easier to see on a wider surface.

The results of each test or observation will be recorded in the field notebook.

DNAPL Screening Procedure During Bedrock Drilling

To screen for the potential presence of DNAPL in the bedrock, drilling fluids, rock cuttings, and/or core samples are monitored for the presence of sheens. During drilling using rotary methods (coring or roller bit drilling with water or drilling mud), the return fluid will be screened with a PID or OVA and evaluated continuously for the presence of a sheen in the recirculation tub. Where core samples are obtained, they will be carefully evaluated for the presence of a sheen on fracture surfaces. During drilling using air-rotary methods, the rock cuttings will be continuously screened using a PID or OVA and evaluated for the presence of a sheen. During drilling with rotary methods, the positive head level at the borehole will reduce the potential for DNAPL short-circuiting via the borehole.

If a sheen is observed with any of these methods, drilling will be temporarily discontinued and an evaluation will be undertaken to determine whether pooled DNAPL is present. The drill stem will be retracted to a few feet above the apparent depth where the sheen was first encountered. Groundwater will be extracted from the borehole to produce a drawdown of 5 to 10 feet below the approximate static, non-pumping water level for a period of 20 minutes to test for the presence of pooled, mobilizable DNAPL in the fractures surrounding the open borehole. The bottom of the borehole then will be evaluated for the presence of DNAPL using an interface probe or bottom-loading bailer. If no DNAPL is observed, the interpretation will be made that the sheen was not produced by pooled DNAPL. In this case, if drilling by the rotary method, the recirculation water will be replaced by clean water and drilling will continue. Replacing the recirculation water reduces the potential for cross-contamination and facilitates observation of a newly created sheen, if any, at a deeper interval. Accumulation of DNAPL in the bottom of the borehole, however, indicates that the boring has encountered pooled DNAPL. If DNAPL has accumulated, it will be removed using a bottom-loading bailer or pump.

Data Collection Below Zone Containing Pooled DNAPL

If pooled DNAPL is encountered in a borehole and deeper drilling is required to collect data below a zone containing pooled DNAPL, one of the following actions will be taken.

1) Adjustment of Drilling Location - The boring where pooled DNAPL was encountered will be abandoned by tremie grouting using neat cement grout, and a replacement boring will be re-attempted at a nearby location.

2) DNAPL Sump Installation - A DNAPL collection well will be installed with a blank sump properly grouted in place below the screen, and the boring will be re-attempted at a nearby location. In this case, after removing the DNAPL in the borehole, the boring may be advanced an additional 2 to 3 feet to accommodate a blank sump below the interval with apparent pooled DNAPL.

3) Casing Off DNAPL Layers - If pooled DNAPL is found be present throughout an area where deeper drilling is essential, a permanent, grouted casing should be installed. The bottom of the pooled DNAPL likely coincides with the top of a relatively fine-grained, low permeability, stratum (capillary barrier). Permanent casing will be installed to the bottom of the borehole and grouted in place using the displacement method prior to advancing the borehole any further. In this case, after removing any DNAPL that may have accumulated in the borehole, the boring may be advanced a few feet into the top of the underlying confining layer or up to 5 feet in bedrock prior to grouting the casing to assist in isolating the zone containing apparently pooled DNAPL. When the casing is grouted in place and the grout has set, the drilling recirculation water will be replaced with clean water to prevent cross contamination and facilitate observation of a newly created sheen (if any) at a deeper interval, and drilling will continue.

DNAPL Monitoring

New wells installed in borings where DNAPL was encountered during drilling will be monitored for DNAPL accumulation in the DNAPL sump using and oil-water interface probe or bottom-loading bailer within approximately one day following initial installation. If DNAPL is encountered, a bottom-loading bailer or pump will be used to remove the DNAPL, the final DNAPL thickness will be recorded, and the DNAPL thickness will be reassessed after another day of accumulation (if any). This process will be repeated until DNAPL no longer accumulates overnight, at which point the accumulation monitoring and removal period will extend to one-week intervals. If no DNAPL accumulation is observed over a period of one week, further DNAPL monitoring may be continued with a longer period between monitoring events.

Any DNAPL recovered during drilling and monitoring activities should be analyzed for chemical composition, DNAPL-water interfacial tension, density, and viscosity. The physical tests should be performed at the approximate groundwater temperature at the site where the DNAPL sample was obtained, typically between 10ºC and 20ºC. These parameters will allow for correlation of groundwater chemistry with suspected DNAPL locations and will allow an estimate to be made of the volume and potential mobility of DNAPL, if any, in the formation.

1.7 Waste Management

DNAPL removed from wells will be temporarily stored on site in metal drums for subsequent appropriate off-site disposal. The locations and volumes of recovered DNAPL will be noted.

1.8 Data Recording and Management

Any occurrences of DNAPL encountered during subsurface investigations will be documented in an appropriate field notebook in terms of the drilling location (boring or well identification), depth below surface, type of geologic material DNAPL was observed within, field screening and testing results, and apparent degree of DNAPL saturation (pooled or residual). DNAPL locations and depths will be recorded on subsurface log forms, as appropriate.

1.9 Quality Assurance

DNAPL can be mobilized downward as a result of drilling operations. It is very difficult to drill through DNAPL without bringing about vertical DNAPL mobilization. This opinion is stated by USEPA (1992): “In DNAPL zones, drilling should generally be minimized and should be suspended when a potential trapping layer is first encountered. Drilling through DNAPL zones into deeper stratigraphic units should be avoided.” The DNAPL screening procedure outlined in this plan should therefore be implemented while drilling at all locations and depths within overburden or bedrock where potential DNAPL presence is suspected. If data collection is required below a zone containing DNAPL, the interval containing DNAPL will be cased off prior to drilling deeper.

1.10 References

Kueper, B.H., May 11, 1995. DNAPL Contingency Plan. [Prepared at the request of *de maximis, inc*.].

United States Environmental Protection Agency (USEPA), 1992. Memorandum from D. Clay: Considerations in Ground-Water Remediation at Superfund Sites and RCRA Facilities – Update. OSWER Directive No. 9283.1-06.

Appendix B

Field Sampling Plan

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

Field Sampling Plan

Remedial Investigation

Washington Street Former MGP Site Binghamton, New York

New York State Electric & Gas Corporation
Binghamton, New York

February 2005

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

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1. Introduction

1.1 General

This Field Sampling Plan (FSP) supports the Remedial Investigation (RI) Work Plan prepared by Blasland, Bouck & Lee, Inc. (BBL) for the Binghamton (Washington Street) former Manufactured Gas Plant (MGP) Site (the "site") located in Binghamton, New York. The investigation locations described in the RI Work Plan are shown on Figure 3 of the Work Plan. The RI Work Plan and this FSP were prepared on behalf of the New York State Electric & Gas Corporation (NYSEG).

This FSP addresses the field procedures and sample collection methods to be used during implementation of the investigation field activities. The FSP should be used in conjunction with the RI Work Plan, the Quality Assurance Project Plan (QAPP), the Health and Safety Plan (HASP), and the Community Air Monitoring Plan (CAMP). The RI Work Plan presents the site background and defines the field sampling program. The QAPP presents the quality assurance/quality control (QA/QC) procedures to be used during implementation of the RI Work Plan, as well as a description of the general field and laboratory procedures. The CAMP provides a measure of protection for the downwind communities from potential airborne releases of constituents of concern during RI activities. The QAPP, HASP, and CAMP are provided in Appendices C, D, and E, respectively, of the RI Work Plan.

1.2 Project Objectives

The objectives of the RI are to: 1) provide data to assess current site conditions and evaluate whether future investigation and/or remedial activities may be necessary; and 2) develop a site conceptual model. NYSEG has developed the following specific objectives for the RI:

- evaluate the presence and extent of MGP or other impacts in soil at the site by collecting, visually characterizing, and analyzing surface and subsurface soil samples;
- evaluate the presence and extent of MGP or other impacts in groundwater beneath the site by collecting and analyzing groundwater samples;
- characterize the general shape of the confining layer, and develop a preliminary assessment of shallow groundwater flow patterns at the site;
- investigate the potential impacts associated with former MGP gas holders;
- evaluate the presence and extent of MGP or other impacts in the Chenango River adjacent to the site (if necessary, based on soil and groundwater investigation results) by probing and collecting sediment samples;
- develop a conceptual site model using the data gathered during this RI; and
- evaluate potential human exposure pathways for both current and anticipated future site conditions using the investigation sampling results.

1.3 Overview of Investigation Field Activities

To obtain information necessary to meet the investigation objectives stated above, the following activities will be conducted:

- soil boring and sampling;
- test pit excavation;

- monitoring well/piezometer installation;
- comprehensive measurement round of fluid levels;
- groundwater sampling of existing and new monitoring wells; and
- sediment probing and sampling (if needed).

The sampling locations and quantities for each field sampling activity are described in detail in the RI Work Plan, and therefore, are not further described in this FSP. Soil, sediment, and groundwater samples will be analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), total cyanide, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Resource Conservation and Recovery Act (RCRA) metals, polychlorinated biphenyls (PCBs), and/or total organic carbon (TOC), as discussed in the RI Work Plan. Table 2 of the RI Work Plan presents the anticipated number of samples for specific laboratory analyses from each matrix type.

A site location map, a site layout map, and a sampling location figure have been prepared to support the field investigation. These figures are presented as Figures 1 through 3 of the RI Work Plan.

2. Field Activities

2.1 General Field Guidelines

Underground utilities will be identified prior to any drilling or subsurface sampling. Public and privately owned utilities will be located by contacting responsible agencies by phone to request underground utilities be marked at the site. Other potential onsite hazards such as traffic, overhead power lines, and building hazards will be identified during a site reconnaissance visit.

The following is a general list of equipment necessary for sample collection.

- stainless steel spoons and bowls for compositing soil samples;
- appropriate sample containers provided by the laboratory (kept closed and in laboratory supplied coolers until the samples are collected);
- reagent grade preservatives and pH paper (or pre-preserved sample containers) for aqueous samples;
- chain-of-custody record forms;
- log book, field sampling records, and indelible ink pens and markers;
- laboratory grade soap (such as Alconox), reagent grade solvents, and distilled water to be used for decontaminating equipment between sampling stations;
- buckets, plastic wash basins, and scrub brushes for decontaminating equipment;
- camera and film;
- metal pins/wooden stakes and flagging to identify sampling locations;
- shipping labels and forms;
- knife;
- packing/shipping material for sample bottles;
- strapping tape;
- clear plastic tape;
- duct tape;
- aluminum foil;
- reclosable plastic bags; and
- portable field instruments, including a photoionization detector (PID), water quality meter, conductivity meter, and water-level probe.

Field log books will be maintained by the field team leader and other team members to provide a daily record of significant events, observations, and measurements during the field investigation.

Information pertinent to the field investigation and/or sampling activities will also be recorded in the log books. The books will be bound with consecutively numbered pages. Entries in the log book will include, at a minimum, the following information:

- name of author, date of entry, and physical/environmental conditions during field activity;
- purpose of sampling activity;
- location of sampling activity;
- name of field crew members;
- name of any site visitors;
- sample media (soil, sediment, groundwater, etc.);
- sample collection method;

- number and volume of sample(s) taken;
- description of sampling point(s);
- volume of groundwater removed before sampling (where appropriate);
- preservatives used;
- date and time of collection;
- sample identification number(s);
- field observations; and
- any field measurements made, such as pH, temperature, conductivity, water-level, etc.

All original data recorded in field log books and chain-of-custody forms will be written with indelible ink. If an error is made on an accountable document assigned to one individual, that individual will make all corrections simply by crossing a single line through the error and entering the correct information. The erroneous information will not be erased. Any subsequent error discovered on an accountable document will be corrected by the person who made the entry. All subsequent corrections will be initialed and dated.

2.2 Sample Labeling, Packing, and Shipping

Each sample will be given a unique identification. With this type of identification, no two samples will have the same label.

Samples will be promptly labeled upon collection with the following information:

- project number and site;
- unique sample identification;
- analysis required;
- date and time sampled;
- sample type (composite or grab); and
- preservative, if applicable.

Clear tape will be secured over the sample label and the chain-of-custody will be initiated. A sample chain-of-custody form is included as Attachment A.

Appropriate sample containers, preservation methods, and laboratory holding times for each sample type will be applied as identified in the QAPP.

If samples are to be shipped by commercial carrier (e.g., Federal Express), sample bottles/jars will be packed in coolers containing the following:

- a drain plug (if present) that has been sealed with duct tape;
- one to two inches of vermiculite or bubble wrap on the bottom of the cooler;
- ice packaged in re-sealable plastic bags;
- sufficient vermiculite or bubble wrap to fill in the remaining area; and
- the completed chain-of-custody in a re-sealable plastic bag, taped in place on the inside cover of the cooler.

The cooler will then be sealed with tape. Appropriate shipping labels, such as "this-end-up" and "fragile" stickers will be affixed to the cooler. Samples will be hand delivered or delivered by an express carrier within 48 hours of sample collection. The express carrier will not be required to sign the chain-of-custody form, however, the shipping receipt should be retained by the sampler, and forwarded to the project files.

2.3 Equipment Decontamination

2.3.1 Drill Rig Decontamination

A decontamination pad will be lined with plastic sheeting on a surface sloped to a sump. The sump must also be lined and of sufficient volume to contain approximately 20 gallons of decontamination water. All drilling equipment including rear-end of drilling rig, augers, bits, rods, tools, split spoon samplers, and tremie pipe will be cleaned on the decontamination pad with a high pressure hot water "steam cleaner" unit and scrubbed with a wire brush, as needed, to remove dirt, grease, and oil before beginning work in the project area. If heavy accumulations of tars or oils are present on the downhole tools, a citrus-based cleaner (e.g., Citra-Solu®) may be used to aid in equipment cleaning. Tools, drill rods, and augers will be placed on sawhorses, decontaminated pallets, or polyethylene plastic sheets following steam cleaning. Direct contact with the ground will be avoided. The back of the drill rig, augers, rods, and tools will be decontaminated between each drilling location according to the above procedures. Decontamination water will be contained in a dedicated plastic tank or 55-gallon open-top drums located onsite. All open-top drums will remain closed when not in use.

Following decontamination of all heavy site equipment, the decontamination pad will be decommissioned. The decommissioning will be completed by:

- transferring the bulk of the remaining liquids and solids into the drums, tanks, and waste wranglers to be provided by NYSEG or the drilling subcontractor for these materials; and
- rolling the sheeting used in the decontamination pad onto itself to prevent discharge of the remaining materials to the ground surface. Once rolled up, the polyethylene sheeting will be placed in the waste wrangler or drums used for disposal of personal protective equipment (PPE) and disposable equipment.

Unless sealed in manufacturers packaging, polyvinyl chloride (PVC) monitoring well casing screens will be decontaminated by the above procedures before installation.

2.3.2 Sampling Equipment Decontamination

Prior to every entry into each borehole, all non-dedicated bowls, spoons, hand augers, bailers, and filtering equipment will be washed with potable water and a detergent (such as Alconox). Decontamination may take place at the sampling location as long as all liquids are contained in pails, buckets, etc. The sampling equipment will then be rinsed with potable water, followed by a 10 percent “pesticide-grade” methanol rinse, and finally a distilled water rinse. When sampling for inorganic constituents in an aqueous phase, an additional rinse step will be added prior to the rinse with methanol. The rinse step will entail a rinse with a 10 percent “ultra pure-grade” nitric acid followed by a distilled water rinse. In addition, when sampling for polychlorinated biphenyls (PCBs) in an aqueous phase, an additional rinse step using 10 percent hexane (followed by a distilled water rinse) will be completed prior to the methanol rinse. Between rinses, equipment will be placed on polyethylene sheets or aluminum foil if necessary. At no time will washed equipment be placed directly on the ground. Equipment will be either be used immediately or wrapped in plastic or aluminum foil for storage or transportation from the designated decontamination area to the sampling location.

2.4 Subsurface Soil - Split-Spoon Sampling Method

The Standard Penetration Test (ASTM D 1586 84) and hollow-stem augers or flush-joint casing will be used during drilling in overburden to collect split spoon samples from the unconsolidated fill and soils beneath the site. Samples will be selected for laboratory analysis based on:

- their position in relation to potential source areas;
- the visual presence of source materials;
- the relative levels of volatile organics based on PID field screening measurements; and/or
- the discretion of the onsite geologist.

Samples selected for laboratory analysis will be placed in the appropriate containers provided by the laboratory. Sample containers for volatile organic analyses will be filled first. Soil VOC samples will not be collected using methanol preservation or analyzed using USEPA Method 5035. Next, a sufficient amount of the remaining soil will be homogenized by mixing the sample in a decontaminated stainless steel tray or bowl with a decontaminated stainless steel trowel or disposable scoop. Laboratory-supplied sample containers for other analytes will then be filled. Duplicate samples will be collected at the frequency detailed in the QAPP (Appendix B) by alternately filling two sets of sample containers.

Where there is sufficient sample volume, representative portions of each soil sample will be placed in a one-pint jar or re-closable plastic bag, labeled, and stored onsite. This container will be labeled with:

- site;
- boring number;
- interval sampled;
- date; and
- initials of sampling personnel.

Headspace screening will be performed on these soil samples using a PID. In addition, a geologist will be onsite during the drilling operations to describe each sample in accordance with the Unified Soil Classification System (USCS), and will include:

- soil type and sorting;
- color;
- feet of recovery;
- moisture content;
- texture;
- grain size and shape;
- relative density;
- consistency;
- visible evidence of residues; and
- miscellaneous observation.

For samples that may be submitted for chemical analysis, split spoons will be decontaminated, as specified in Section 2.3.2, after each sample is collected. Sample descriptions, PID readings, and location will be recorded in the field book. Calibration, operation, and maintenance procedures are included as Attachment C for one type of PID commonly used in the field. The procedures to be followed will be dependent on the PID acquired for this project, as described in the equipment manual.

2.5 Monitoring Well/Piezometer Installation and Development

Monitoring wells and piezometers will be installed to the depths and at the locations defined in the RI Work Plan. After completion of drilling and well installation, all wells will be developed to establish the hydraulic connection between the well and the formation. The following procedures will be used to drill, install, and develop monitoring wells.

2.5.1 Drilling and Geological Logging Methods

The drilling and geological logging methods to be completed in connection with monitoring well installation are as follows:

- Boreholes in the overburden will usually be drilled with hollow-stem augers. As appropriate, a direct-push (e.g., Geoprobe) drilling rig may be used.

- Split spoon sampling will be conducted during the advancement of soil borings for the overburden monitoring wells. Sampling will be performed in accordance with ASTM Specification D 1586 84 for standard penetration test and split-spoon sampling, unless otherwise authorized by the field geologist.

- The designated field geologist will log borehole geology and monitoring well specifications in the field book and/or field forms.

- A plywood sheet or tub may be placed around the auger or casing when drilling to contain cuttings.

- Soil cuttings will be placed in a drum or waste wrangler supplied by NYSEG or the drilling subcontractor. Decontamination water will be placed in plastic tanks/drums supplied by NYSEG or the drilling subcontractor. Soil cuttings and decontamination water will be picked up and containerized at the end of each work day. The rolloffs or open-top drums used to contain the solids will be covered when not in use.

Results from the drilling efforts will be recorded in the field book.

2.5.2 Monitoring Well/Piezometer Specifications

Attachment B shows details of a typical monitoring well construction for shallow wells that do not penetrate a presumed confining layer. The overburden monitoring wells will be installed according to the following specifications:

- PVC 2-inch-diameter Schedule 40 threaded, flush-joint casing and 0.010-inch or 0.020-inch slot screens will be installed. A larger well screen slot size will be provided, as appropriate, if NAPL is encountered during drilling. Based on BBL's experience at MGP sites in the area, the slot size would not likely exceed 0.020-inches to limit the possibility of the well becoming plugged with fine-grained materials. The length of the well screens will be determined based on observations made during the drilling of the soil boring for each well.

- Each monitoring well will be constructed with a 2-foot long, grouted sump.

- Each monitoring well will be constructed using flush-mount casings.

- The annulus around the screens will be backfilled with an appropriate size of silica sand to a minimum height of 1 foot above the top of the screen, assuming there is sufficient room to install an appropriate surface seal above the sand.

- A chipped bentonite seal or slurry (30 gallons water to 25 to 30 pounds bentonite, or relative proportions) will be placed above the sand pack up to ground surface.

- Each monitoring well will be finished with an 8-inch diameter, flushed-mounted curb box and equipped with 2-inch locking J-plug cap.

The proposed piezometer will be installed using the specification described above for the installation of the monitoring wells. However, a PVC 1-inch diameter casing shall be used for the installation of the piezometer.

The following characteristics of each newly installed well/piezometer will be recorded in the field log book:

- date/time of construction;
- drilling method and drilling fluid used;
- approximate well location;
- borehole diameter and well casing diameter;
- well depth;
- drilling and lithologic logs;
- casing materials;
- screen materials and design;
- casing and screen joint type;
- screen slot size/length;
- filter pack material/size;
- filter pack placement method;
- sealant materials;
- sealant placement method;
- well development procedure;
- type of protective well cap; and
- detailed drawing of well (including dimensions).

2.5.3 Monitoring Well Development

A minimum of 24 hours after installation, the monitoring wells will be developed by surging/purging, using a centrifugal pump and dedicated polyethylene tubing, or by Waterra positive displacement pumps and dedicated polyethylene tubing, or other methods at the discretion of the field geologist. The development water will be contained in a tank onsite or in drums to be provided by NYSEG or the drilling subcontractor. The wells will be developed until the water removed from the well is reasonably free of visible sediment (50 nephelometric turbidity units [NTUs]), if possible, or until the turbidity levels stabilize. A minimum of 3 to 5 well volumes of water will be removed from each monitoring well during development. Following development, wells will be allowed to recover for at least one week before groundwater is purged and sampled. All monitoring well development will be overseen by a field geologist and the duration, method of development, and approximate volume of water removed will be recorded in the field book.

2.6 Fluid-level Measurements

The following procedure will be used to measure fluid-levels at monitoring wells and piezometers:

- Decontaminate the water level probe or oil/water interface probe (for wells expected to contain NAPL); and

- Measure the static fluid-level, fluid interfaces (i.e., NAPL/water interface), and sound the bottom of the well (if applicable) with reference to the surveyed elevation mark on the top of the PVC casing. Record all measurements to nearest 0.01 foot and record in the field book.

The measurements will be made in as short a timeframe as practical to minimize temporal fluctuations in hydraulic conditions. One round of fluid-level elevations will be collected as discussed in the RI Work Plan.

2.7 Low-Flow Groundwater Sampling Procedures for Monitoring Wells/Piezometers

This protocol describes the procedures to be used to collect groundwater samples. No wells will be sampled until well development has been performed. During precipitation events, groundwater sampling will be discontinued until precipitation ceases. When one round of water levels is taken to generate water-elevation data, the water levels will be taken consecutively at one time prior to sampling or other activities.

The following materials, as required, shall be available during groundwater sampling:

- sample pump;
- sample tubing;
- power source (i.e., generator);
- PID;
- appropriate health and safety equipment as specified in the HASP;
- plastic sheeting (for each sampling location);
- dedicated or disposable bailers;
- new disposable polypropylene rope;
- buckets to measure purge water;
- water-level probe;
- six-foot rule with gradation in hundredths of a foot;
- conductivity/temperature meter;
- pH meter;
- turbidity meter;
- appropriate water sample containers;
- appropriate blanks (trip blank supplied by the laboratory);
- appropriate transport containers (coolers) with ice and appropriate labeling, packing, and shipping materials;
- groundwater sampling logs;
- chain-of-custody forms;
- indelible ink pens;
- site map with well locations and groundwater contours maps; and
- keys to wells.

The following 21 steps detail the monitoring well/piezometer sampling procedures:

1. Review materials checklist to ensure that the appropriate equipment has been acquired.

2. Identify site and well sampled on sampling log sheets, along with date, arrival time, and weather conditions. Identify the personnel and equipment used and other pertinent data requested on the logs. A groundwater sampling log is provided in Attachment D.

3. Label all sample containers using an appropriate label.

4. Use safety equipment, as required in the HASP.

5. Place plastic sheeting adjacent to the well to use as a clean work area.

6. Establish the background reading with the PID and record the reading on the field log.

7. Remove lock from the well and if rusted or broken replace with a new brass keyed-alike lock.

8. Unlock and open the well cover while standing upwind of the well. Remove well cap and place on the plastic sheeting. Insert PID probe in the breathing zone above the well casing following instructions in the HASP.

9. Set out on plastic sheeting the dedicated or disposable sampling device and meters.

10. Prior to sampling, groundwater elevations will be measured at each monitoring well and the presence of light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL), if any, within the well will be evaluated. Obtain a water-level depth and bottom of well depth using an electric water probe and record on the sampling log sheet. Clean the well probe after each use with a soapy (Alconox) water wash and a tap water rinse. [Note: water levels will be measured at all wells prior to initiating a sampling event].

11. After groundwater elevations are measured and NAPLs are determined not to be present, groundwater will be purged from the wells. If NAPLs are determined present, then a groundwater sample will not be collected, rather a representative NAPL sample may be collected (if required) using a peristaltic pump.

12. Pump, safety cable, electrical lines, and/or tubing (for peristaltic pumps) will be lowered slowly into the well to a depth corresponding to the center of the saturated screen section of the well.

13. Measure the water level again with the pump in the well before starting the pump. Start pumping the well at 200 to 500 milliliters per minute. Ideally, the pump rate should cause little water-level drawdown in the well (less than 0.3 feet and the water level should stabilize). The water level should be monitored every three to five minutes (or as appropriate) during pumping. Care should be taken not to cause the pump suction to be broken or entrainment of air in the sample. Record pumping rate adjustments and depths to water. Pumping rates should, if needed, be reduced to the minimum capabilities of the pump to avoid pumping the well dry and/or to ensure stabilization of indicator parameters. If the recharge rate of the well is very low, purging should be interrupted so as not to cause the drawdown within the well to advance below the pump. However, a steady flow rate should be maintained to the extent practicable. Sampling should commence as soon as the volume in the well has recovered sufficiently to permit sample collection.

14. During well purging, monitor the field indicator parameters (turbidity, temperature, specific conductance, pH, etc.) every three to five minutes (or as appropriate). The well is considered stabilized and ready for

sample collection when the indicator parameters have stabilized for three consecutive readings as follows (Puls and Barcelona, 1996):

$\pm$0.1 for pH
$\pm$3% for specific conductance (conductivity)
$\pm$10% for turbidity

Turbidity usually require the longest time to achieve stabilization. The pump must not be removed from the well between purging and sampling. If the parameters have stabilized, but the turbidity is not in the range of the 50 NTU goal, the pump flow rate should be decreased to no more than 100 millimeters per minute. Measurement of the indicator parameters should continue every three to five minutes. Measurements for parameters may be taken using a flow-thru cell or in a clean container such as a glass beaker.

15. Fill in the sample label and cover the label with clear packing tape to secure the label onto the container.

16. After the groundwater quality parameters have stabilized as discussed above, obtain the groundwater sample needed for analysis directly from the sampling device in the appropriate container and tightly screw on the caps. Use a dedicated or disposable bailer to collect the groundwater sample designated for laboratory analysis for VOCs.

17. Secure with packing material and store at 4 degrees Celsius on wet ice in an insulated transport container provided by the laboratory.

18. After all sampling containers have been filled, remove one additional volume of groundwater. Check the calibration of the meters and then measure and record on the field log the physical appearance, pH, temperature, turbidity, and conductivity.

19. Record the time sampling procedures were completed on the field logs.

20. Place all disposable sampling materials (plastic sheeting, disposable bailers, and health and safety equipment) in appropriately labeled containers. Go to the next well and repeat Step 1 through Step 20 until all wells are sampled.

21. Complete the procedures for packaging, shipping, and handling with associated chain-of-custody forms (Section 2.2).

2.8 Sediment Sampling (If Needed)

This subsection outlines the general procedures to be used for obtaining sediment samples from the Chenango River, if necessary. Lexan® tubing or a hand-held dredge sampler will be the primary methods used to collect sediment cores.

The following materials will be available, as required, during sediment sampling activities:

- PPE (as required by the HASP);
- cleaning equipment (as required by Section 2.3);
- boat and motor;
- buoys, booms, and rope;
- sorbent pads;

- hand-held dredge sampler with rope;
- calibrated rod for sediment depth measurement;
- aluminum or stainless steel tray;
- plastic sheeting;
- surveyor's rods;
- duct tape;
- Lexan® tubing with end caps;
- stainless steel core driver block;
- stainless steel spatula;
- brass push rod;
- handsaw or knife;
- vacuum pump;
- camera and film;
- transport container with ice;
- appropriate sample containers and forms; and
- field notebook.

2.8.1 Procedures for Lexan® Tube Sampling

1. Identify the proposed sample location in the field notebook along with other appropriate information collected during sediment sampling activities.

2. Use PPE (as required by the HASP).

3. At each sample location, lower a section of 3-inch-diameter Lexan® tube until it just reaches the top of sediment. Measure the depth of water. (Sections of Lexan® tube may need to be spliced together in deep water locations).

4. Push the Lexan® tube into the sediment by hand until refusal. Measure the depth of sediment.

5. Drive the tube several more inches if possible, using a stainless steel core driver block, and measure the distance. This procedure is performed to obtain a "plug" at the bottom of the core and prevent the loose sediment from escaping.

6. Place a vacuum pump on the top end of the Lexan® tube and create a vacuum to minimize the potential of the sediments/plug from escaping.

7. Slowly pull the tube from the sediment, twisting it slightly as it is removed (if necessary).

8. Before the tube is fully removed from the water, place a cap on the bottom end of the tube while it is still submerged.

9. Keeping the tube upright, wipe the bottom end dry and seal the cap with duct tape.

10. Transport the core sample to the shore.

11. While still keeping the core upright, use a handsaw to make a horizontal cut in the tube approximately one inch above the sediment.

12. Re-cap the cut end of the tube, seal the cap with duct tape, and mark this end as "TOP."

13. Wipe the tube dry.

14. Place the completed sample label on the tube.

15. Record the following information on both the tube and on the cap: 1) sample number; 2) sampling date; and 3) sampling time.

16. Repeat Steps 1 through 15 until all core samples are collected.

17. Sediment cores will be extruded from the Lexan® tubing onto an aluminum or stainless steel tray, or clean plastic sheeting. Cores will be segmented based on the requirements set forth in the RI Work Plan.

18. The cores will either be split or a core extruder will be used to remove sediments from the Lexan® liner. The extruder will be cleaned between cores.

19. The handsaw or knife used to section the core should be cleaned (as described in Section 2.3.2) between each cut.

20. Label all sample containers with 1) site; 2) project number; 3) location number; 4) sample interval; 5) date; 6) time of core collection; and 7) names of sampling personnel.

21. Handle, pack, and ship the samples in accordance with the procedures in Section 2.2.

22. A transport boat may be used to move cores from the sampling vessel to the shore, if necessary.

2.8.2 Procedures for Sediment Probing

A calibrated metal rod will be used to probe sediment depths along the proposed transects. From a boat, at each station, the water depth to top of sediment will be measured by probing with a surveyor's rod. The sediment depth will then be measured by pushing a calibrated galvanized hollow pipe into the sediment until refusal using reasonable human force. The depth of the penetrated sediment will be noted by subtracting the length of the rod above the water surface and the water depth at the point being probed from the length of the entire rod. Measurements made of location, depth, time, and field samples will be noted in the field notebook. In addition, any sheens or NAPL observed during the probing will be carefully documented based on physical appearance and whether the NAPL sinks or floats.

2.9 Test Pit Excavation

The test pits will be excavated using a backhoe equipped with a bucket. If residues are visually observed in the test pit, the contents may also be sampled.

The following materials will be available, as required, during test pit excavation.

- backhoe with bucket;

- shovel;
- plastic sheeting;
- stainless steel hand trowel;
- stainless steel pan;
- appropriate sample containers and packing materials, if required;
- potable water;
- steam cleaning equipment;
- appropriate Health and Safety equipment as required by the HASP;
- PID;
- camera/video camera; and
- test pit log.

2.9.1 Procedures for Test Pit Excavation

The following procedures will be used to excavate test pits.

1. Identify the test pit number on an appropriate log or in the designated field notebook, along with the temperature, weather, date, time, and personnel at the site.

2. Set up decontamination station and decontaminate the backhoe, bucket, shovel, and other sampling apparatus with a high-pressure steam rinse using a tap water source.

3. Don PPE (as required by the HASP).

4. Place the plastic sheeting on the ground next to the test pit location.

5. Position backhoe and personnel at upwind (to the extent feasible) locations of the test pit area.

6. Turn on the PID. Measure and record on the test pit log (included in Attachment E) background PID readings on the log or in the field book.

7. Excavate the soil with the backhoe in approximately two-foot increments. At each interval, examine and classify the soils in accordance with the USCS. Record these observations in the test pit log or field book. Also screen the soil samples with a PID. These measurements will also be recorded in the test pit log (or field book).

8. If the contents of the test pit visually appear to consist of site residues, the test pit contents may be sampled. If sampling is required, the test pit will be sampled with a shovel if the test pit is less than 3 feet deep. If the test pit is greater than three feet deep, then the test pit will be sampled with the backhoe bucket. The contents of the bucket will then be sampled with a cleaned stainless steel hand trowel.

9. If sampling is required, the samples will be collected in the appropriate containers and placed immediately in a cooler of wet ice to maintain a 4ºC temperature for preservation. Volatile organic samples will be collected immediately after sample retrieval. Next, a sufficient amount of the remaining soil will be removed from the sampling device and homogenized by mixing thoroughly in a clean stainless steel pan with a clean stainless steel trowel. Samples will be selected for analytical characterization only if visible residues are present and/or relatively high PID screening readings are measured.

10. The test pit will be terminated when significant residues are encountered, the top of the water table is reached, or to the maximum reach of the backhoe, whichever occurs first.

11. Soils generated during drilling will be staged on plastic during excavation, monitored for PID readings and visual observations, then placed back into the test pit. Clean fill will be placed at the surface.

12. A labeled stake will be placed at the test pit location.

13. A photograph of each location before, during, and after each test pit is excavated will be taken.

14. The backhoe, backhoe bucket, and all tools used at the test pit area will be decontaminated using a high-pressure steam rinse using a tap water source. Decontamination water and residual materials associated with decontamination will be contained.

2.10 Air Monitoring

Air monitoring will be conducted as described in the Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP). Both a PID and dust monitor will be used for monitoring during all intrusive activities. During sampling activities, only the PID will be used for monitoring.

The PID will be used to monitor organic vapors in the breathing zone and borehole, and to screen samples for analysis. The dust monitor will be used to monitor particulate concentration in the breathing zone for particulates less than 10 microns in diameter.

The PID and dust monitor readings will be recorded in the field book during drilling and test pit excavation activities. The instruments will be calibrated at least once each day, and more frequently if needed. A detailed procedure for the PID calibration is included as Attachment C.

3. Field Instruments

All field screening equipment will be calibrated immediately prior to each day's use and more frequently if required. The calibration procedures will conform to the manufacturer's standard instructions. Records of all instrument calibration will be maintained by the field personnel. Copies of all of the instrument manuals will be maintained onsite by the field personnel.

3.1 Portable Photoionization Detector

The PID will be a Photovac MicroTip (or equivalent), equipped with a 10.6 eV lamp. The Photovac is capable of ionizing and detecting compounds with an ionization potential of less than 10.6 eV. This accounts for up to 73 percent of the VOCs on the Target Compound List. Calibration will be performed according to the procedures outlined in Attachment C.

3.2 Dust Monitor

The dust monitor will be a MIE DataRAM (or equivalent) and will be calibrated at the start of each day of use. Calibration and maintenance of the dust monitor will be conducted in accordance with the manufacturer's specifications. The calibration data will be recorded in field notebooks.

3.3 pH Meter

The pH meter will be calibrated at the start of each day of use, and after very high or low readings as required by this plan. National Institute of Standards and Technology traceable standard buffer solutions that bracket the expected pH range will be used. The standards will most likely be a pH of 4.0, 7.0, and 10.0 standard units. The pH calibration and slope knobs will be used to set the meter to display the value of the standard being checked. The calibration data will be recorded in field notebooks.

3.4 Specific Conductivity Meter

Calibration checks using the appropriate conductivity standard for the meter will be performed at the start of each day of use, and after very high or low readings, as required by this plan. Readings must be within five percent to be acceptable. The thermometer of the meter will be calibrated against the field laboratory thermometer on a weekly basis.

3.5 Water-Level Meter

The water-level meter will be checked once to a standard to assess if the meter has been correctly calibrated by the manufacturer or vendor. If the markers are incorrect, the meter will be sent back to the manufacturer or vendor.

3.6 Turbidity Meter

The turbidity meter will be calibrated daily prior to use. Calibration and maintenance will be conducted in accordance with the manufacturer's specifications. Calibration and maintenance information will be recorded in the field notebook.

Attachment A

Sample Chain-of-Custody Form

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ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ___ of ___

Lab Work Order #:

Send Results to:

Contact & Company Name:	Telephone:
Address:	Fax:
City State Zip	e-mail address:
Proj. Name/Location (City/State):	Project #:
Sampler's Printed Name:	Sampler's Signature:

Preservative							
Filtered (✓)							
# of Containers							
Container Information							

PARAMETER ANALYSIS & METHOD

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: _________
G. Other: _________
H. Other: _________

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz Glass
7. 4 oz Glass
8. 8 oz Glass
9. Other: ____________
10. Other: ____________

Matrix Key:
SO - Soil SE - Sediment NL - NAPL/Oil
W - Water SL - Sludge SW - Sample Wipe
T - Tissue A - Air Other: _____________

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix								REMARKS

Special Instructions/Comments:

☐ **Special QA/QC Instructions (✓) :**

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	Cooler Custody Seal (✓):	Printed Name:	Printed Name:	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm:	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp:________	Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: **WHITE – Lab returns with results** **YELLOW – Lab Copy** **PINK – Retained by BBL (for project files)**

Attachment B

Monitoring Well Construction Diagram

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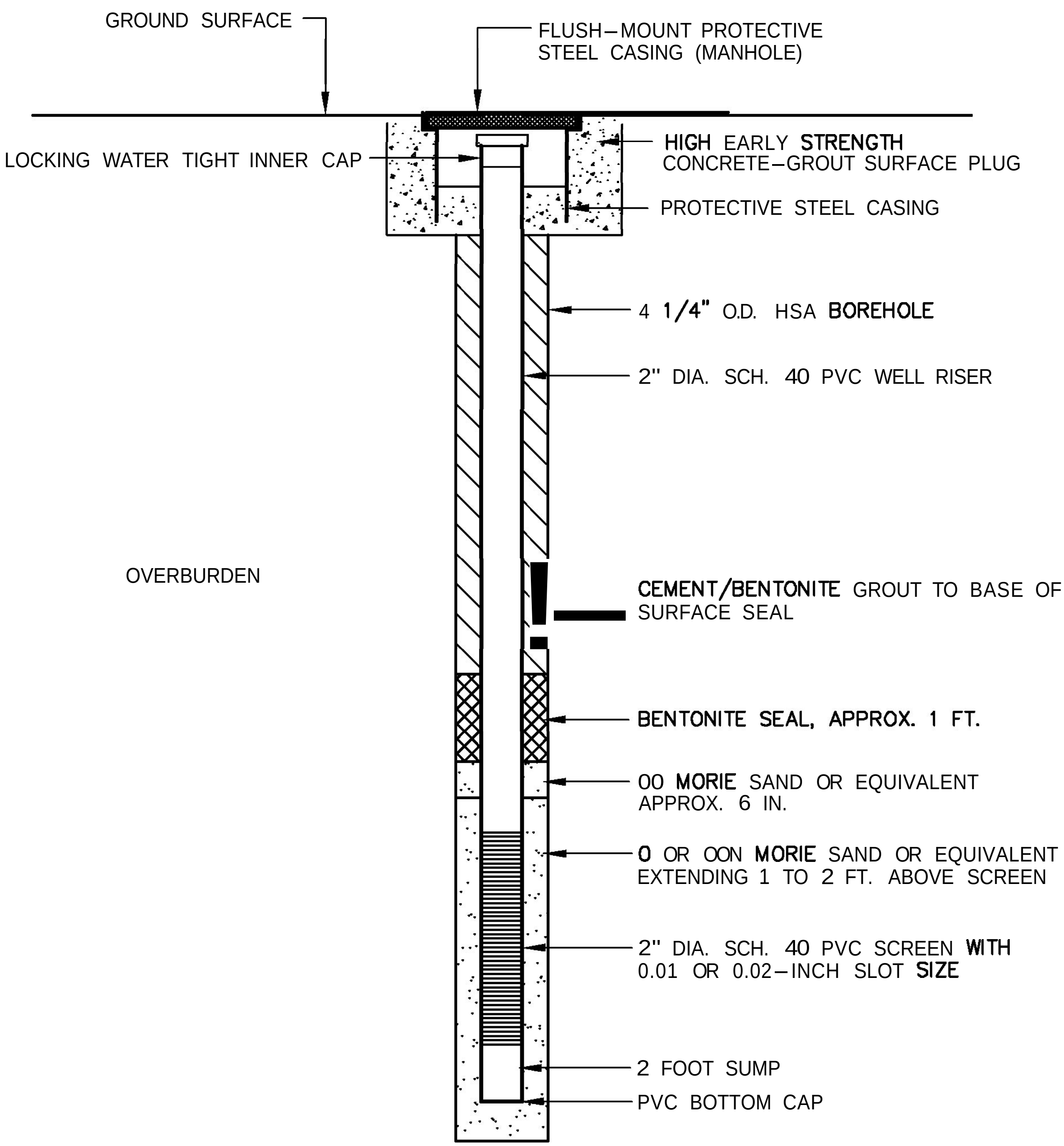

(DRAWING NOT TO SCALE)

NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

REMEDIAL INVESTIGATION

PROPOSED SINGLE-CASED MONITORING WELL CONSTRUCTION SCHEMATIC

BLASLAND, BOUCK & LEE, INC.
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FIGURE
B

X: NONE
L: ON=*, OFF=REF*
2/15/05 SYR-54-RCB
13055001/13055B05.DWG

Attachment C

Photovac MicroTIP Photoionization Detector Calibration, Operation & Maintenance Procedures

BLASLAND, BOUCK & LEE, INC.
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Photovac MicroTIP Photoionization Detector Calibration, Operation & Maintenance Procedures

I. Introduction

The MicroTIP measures relative total concentrations of organic and inorganic vapors in the field and will be calibrated daily prior to use. The MicroTIP does not carry an Intrinsic Safety Rating and will be used in a controlled environment only. The MicroTIP will be used to screen soil samples, the head space of soil/water samples, and to monitor the breathing and work zones as specified in the Health and Safety Plan.

II. Materials

- Photovac MicroTIP (PID);
- Isobutylene calibration gas tank with pressure regulator and up to four other selected span gases;
- zero span gas (clean outdoor air or zero grade gas);
- gas sampling bag with plastic tubing to connect PID probe to calibration gas;
- flow regulator; and
- PID calibration and maintenance log.

III. Calibration Procedures

1. Turn on the MicroTIP and monitor the ambient air. If there is any doubt of the air quality, then zero grade gas will be obtained.
2. Connect the regulator to the span gas cylinder. Hand-tighten the fittings.
3. Open the valve on the gas bag by turning the valve stem fully counterclockwise.
4. Attach the gas bag to the regulator. Hand-tighten the fittings.
5. Turn the regulator knob counterclockwise half a turn to start the gas flow.
6. Fill the gas bag half full and then close the regulator fully clockwise to turn off the flow of gas.
7. Fill the gas bag, and then turn the valve clockwise.
8. Press "CAL" and expose MicroTIP to zero gas. Press "ENTER" and MicroTIP sets its zero point.
9. MicroTIP then asks for the Span Gas concentration. Enter the known Span Gas concentration and then expose the MicroTIP to the Span Gas.
10. Press "ENTER" and MicroTIP sets its response factor.
11. When MicroTIP's display reverts to normal, the MicroTIP is calibrated and ready to use. Remove the Span Gas from the inlet.

12. After seven hours of use, recharge the battery pack. Record the time the battery pack was charged on the MicroTIP Calibration and Maintenance Log.

13. Record the date, time, your initials, calibration gas, and concentration on the Micro TIP Calibration and Maintenance Log.

IV. Operation Procedures

1. Use the health and safety equipment as required by the Health and Safety Plan.

2. Calibrate the instrument as described in subsection III of this Appendix.

3. Measure and record the background PID reading.

4. If the PID will be used for more than seven hours during optimal weather conditions (50º or greater), or during extreme cold or precipitation, have a fully charged battery available for use.

5. In the event of precipitation, fully cover the instrument, leaving the probe accessible for measurements.

6. Measure and record PID reading.

V. Maintenance Procedures

1. At the end of each day or when the battery is fully discharged, recharge batteries overnight.

2. Store the instrument in the protective case when not in use.

3. Keep records of operation, maintenance, calibration problems, and repairs.

4. A replacement instrument will be available on site or ready for overnight shipment, if necessary.

5. The MicroTIP will be sent back to the manufacturer for service if needed.

Attachment D

Field Sampling Log

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GROUND-WATER SAMPLING LOG

Sampling Personnel:		**Well ID:**	
Client / Job Number:		**Date:**	
Weather:		**Time In:**	**Time Out:**

Well Information

Depth to Water:	(feet)	(from MP)
Total Depth:	(feet)	(from MP)
Length of Water Column:	(feet)	
Volume of Water in Well:	(gal)	
Three Well Volumes:	(gal)	

Well Type:	Flushmount	Stick-Up	
Well Material:	Stainless Steel	PVC	
Well Locked:	Yes	No	
Measuring Point Marked:	Yes	No	
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Grundfos	Other:
Tubing/Bailer Material:	St. Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Grundfos	Other:
Duration of Pumping:	(min)			
Average Pumping Rate:	(ml/min)	Water-Quality Meter Type:	Horiba U-22	
Total Volume Removed:	(gal)	Did well go dry:	Yes	No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3875 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO	Cond.	ORP
± 0.1	± 10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
Volume Purged (gal)									
Rate (mL/min)									
Depth to Water (ft.)									
pH									
Temp. (C)									
Conductivity (mS/cm)									
Dissolved Oxygen									
ORP (mV)									
Turbidity (NTU)									
Notes:									

Sampling Information

Analyses	#	Laboratory
VOCs		
PCBs		
Dissolved/Total Inorganics		
Dissolved/Total Cyanide		
Sample ID:	Sample Time:	
MS/MSD: Yes	No	
Duplicate: Yes	No	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Attachment E

Test Pit Log

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Test Pit Log

Test Pit ID:

Client:		**Date/Day:**	
Project:		**Weather:**	
Location:		**Temperature:**	
Project #:		**Wind:**	
Logged By:		**Subcontractor:**	
Coordinates:		**Equipment:**	

Sketch of Test Pit Layout:

Plan View	**Profile View**

Test Pit Dimensions:		**Total Depth:**		**Depth to Water:**	

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected

Notes:

Appendix C

Quality Assurance Project Plan

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P L A N

Quality Assurance Project Plan

Remedial Investigation

Washington Street Former MGP Site
Binghamton, New York

New York State Electric & Gas Corporation
Binghamton, New York

February 2005

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

Table of Contents

Tables

Attachment

Compact Disc

Laboratory Standard Operating Procedures/Quality Assurance Manual

Distribution List

Organization	Individual
New York State Electric & Gas Corporation	Tracy L. Blazicek, CHMM
Blasland, Bouck & Lee, Inc.	John C. Brussel, P.E., Dennis K. Capria, David A. Cornell
New York State Department of Environmental Conservation	James A. Malcom, P.E.
Severn Trent Laboratories, Inc.	Carl Armbruster

BINGHAMTON (WASHINGTON STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

QUALITY ASSURANCE PROJECT PLAN

Prepared By: Blasland, Bouck & Lee, Inc.

Approved:

____
Project Manager
New York State Electric & Gas Corporation

Approved:

____
Project Manager
Blasland, Bouck & Lee, Inc.

Approved:

____
Quality Assurance Coordinator
Blasland, Bouck & Lee, Inc.

Approved:

____
Project Manager
(Analytical Laboratory)

Approved:

____
Quality Assurance Manager
(Analytical Laboratory)

Approved:

____
Project Manager
(Analytical Laboratory)

Approved:

____
Quality Assurance Manager
(Analytical Laboratory)

Approved:

____
Project Manager
New York State Department of Environmental Conservation

Approved:

____
Quality Assurance Manager
New York State Department of Environmental Conservation

Preface

This *Quality Assurance Project Plan* (QAPP) was prepared for the Binghamton (Washington Street) Former MGP Site (the Site) located in Binghamton, New York. It supplements the *Remedial Investigation Work Plan* (RI Work Plan; BBL, 2005a) and presents the sampling and analytical methods and procedures that will be used during the Remedial Investigation (RI) at the Site. Together, this QAPP and the *Field Sampling Plan* (FSP) (BBL, 2005b) constitute the Sampling and Analysis Plan for the Site.

This QAPP was prepared in a manner consistent with the following reference and guidance documents:

- United States Environmental Protection Agency (USEPA) guidance document entitled *EPA Requirements for Quality Assurance Project Plans*, EPA-QA/R-5 (USEPA, 2001), which replaces QAMS-005/80, *Interim Guidance and Specifications for Preparing Quality Assurance Project Plans* (USEPA, 1980);

- USEPA *Guidance for Quality Assurance Project Plans* (USEPA, 2002); and

- The National Enforcement Investigations Center (NEIC) Policies and Procedures Manual (USEPA, 1991).

Information contained in this QAPP has been organized into the following sections:

Section	Content
Project Management	
1	Project Organization
2	Project Background
3	Project Description
4	Quality Objectives and Criteria for Measurement Data
5	Special Training Requirements/Certification
6	Documentation and Records
Measurement/Data Acquisition	
7	Sampling Process Design
8	Sampling Method Requirements
9	Sample Handling and Custody Requirements
10	Analytical Method Requirements
11	Quality Control Requirements
12	Instrument/Equipment Testing, Inspection, and Maintenance Requirements
13	Instrument Calibration and Frequency
14	Inspection/Acceptance Requirements for Supplies and Consumables
15	Data Acquisition Requirements for Non-Direct Measurements
16	Data Management
Assessment/Oversight	
17	Assessment and Response Actions
18	Reports to Management
Data Validation and Usability	
19	Data Reduction and Review
20	Data Validation and Verification
21	Reconciliation with User Requirements

Details on each of the subjects listed above are provided in the subsequent sections. This document also contains pertinent information from the RI Work Plan related to measuring and evaluating the analytical data.

Acronyms and Abbreviations

ASP	Analytical Services Protocol
ASTM	American Society of Testing and Materials
BBL	Blasland, Bouck & Lee, Inc.
bgs	below ground surface
CLP	Contract Laboratory Program
COC	Chain-of-Custody
CSP	Certified Safety Professional
CSV	Comma Separated Value
DNAPL	Dense Nonaqueous Phase Liquid
DQOs	Data Quality Objectives
EDD	Electronic Data Deliverable
FSP	Field Sampling Plan
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
GIS	Geographic Information System
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NCP	National Contingency Plan
NEIC	National Enforcement Investigations Center
NIST	National Institute of Science and Technology
NYSDEC	New York State Department of Environmental Conservation
NYSEG	New York State Electric & Gas Corporation
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PID	Photoionization Detector
QAC	Quality Assurance Coordinator
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SDG	Sample Delivery Group
SOP	Standard Operating Procedure
SOW	Statement of Work
TOC	Total Organic Carbon
TSS	Total Suspended Solids
USGS	United States Geological Survey
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound
SVOC	Semi-Volatile Organic Compound

1. Project Organization

1.1 Project Organization

Investigations performed as part of the Remedial Investigation (RI) for the Binghamton (Washington Street) Former MGP Site, located in Binghamton, New York, will require integration of personnel from the organizations identified below, collectively referred to as the "project team." A detailed description of the responsibilities of each member of the project team is presented below.

1.1.1 Overall Project Management

On behalf of New York State Electric & Gas Corporation (NYSEG), Blasland, Bouck & Lee, Inc. (BBL) has overall responsibility for the RI activities. BBL personnel will perform related sampling activities, evaluate data, and prepare the deliverables as specified in the RI Work Plan. Project direction will be provided by NYSEG, with oversight by the New York State Department of Environmental Conservation (NYSDEC). A list of key project management personnel is provided below.

Company/Organization	Title	Name	Phone Number
NYSDEC	Project Manager	James A. Malcom, P.E.	(518) 402-9669
	Quality Assurance Manager	TBD	TBD
NYSEG	Project Coordinator	Tracy L. Blazicek, CHMM	(607) 762-8839
BBL	Project Officer	Frederick Kirschenheiter, P.E.	(315) 446-9120
	Project Manager	John C. Brussel, P.E.	(315) 446-9120
	Field Manager	David A. Cornell	(315) 446-9120
	Quality Assurance Coordinator	Dennis K. Capria	(315) 446-9120
Lab – STL, Edison	Project Manager	Carl Armbruster	(732) 549-3900
	Quality Assurance Manager	Madhuri Dave	(732) 549-3900

1.1.2 Task Managers

The staff performing the investigations and site activities will be directed by representatives of the project team. The personnel responsible for each of the site activities are listed below.

Company/Organization	Title	Name	Phone Number
BBL	Field Task Manager	Todd P. Merrell	(315) 446-9120
	Survey Task Manager	Terry H. Young	(315) 446-9120
	Health and Safety Officer	Jay D. Keough, CSP	(609) 860-0590
	Database Administrator	TBA	
	Data Validator	TBA	

1.2 Team Member Responsibilities

The responsibilities of the various team members are summarized below by organization.

1.2.1 New York State Electric & Gas Corporation

Project Coordinator
Responsibilities and duties include:

- Provide overall direction of site actions;
- Direct BBL; and
- Review BBL work products, including data, memoranda, letters, reports, and all other documents transmitted to the NYSDEC.

1.2.2 Blasland, Bouck & Lee, Inc.

Project Officer
Responsibilities and duties include:

- Oversee BBL work products; and
- Provide BBL approval for major project deliverables.

Project Manager
Responsibilities and duties include:

- Manage and coordinate the project as defined in the RI Work Plan, with an emphasis on adhering to the objectives of the site activities;
- Review documents prepared by BBL; and
- Ensure that corrective actions are taken for deficiencies cited during any audits of site activities.

Task Managers
The RI components will be managed by various Task Managers, as set forth in Section 1.1.2. Duties of each Task Manager include, as appropriate:

- Manage relevant day-to-day activities;
- Develop, establish, and maintain files on relevant site activities;
- Review data reductions from the relevant site activities;
- Perform final data review of field data reductions and reports on relevant site activities;
- Ensure that corrective actions are taken for deficiencies cited during audits of relevant site activities;
- Perform overall quality assurance/quality control (QA/QC) of the relevant portions of the site activities;
- Review relevant field records and logs;
- Instruct personnel working on relevant site activities;
- Coordinate field and laboratory schedules pertaining to relevant site activities;
- Request sample bottles from laboratory;
- Review field instrumentation, maintenance, and calibration to meet quality objectives;

- Prepare reports pertaining to relevant site activities; and
- Maintain field and laboratory files of notebooks/logs, data reductions, and calculations and transmit originals to the Project Manager.

Field Personnel
Responsibilities and duties include:

- Perform field procedures associated with the investigations as set forth in the RI Work Plan;
- Perform field analyses and collect quality assurance samples;
- Calibrate, operate, and maintain field equipment;
- Reduce field data;
- Maintain sample custody; and
- Prepare field records and logs.

Quality Assurance Coordinator (QAC)
Responsibilities and duties include:

- Review laboratory data packages;
- Oversee and interface with the analytical laboratory;
- Coordinate field QA/QC procedures with Task Managers (including audits of field activities) concentrating on field analytical measurements and practices to meet data quality objectives (DQOs);
- Review field reports;
- Perform and review audit reports;
- Prepare interim QA/QC compliance reports; and
- Prepare a QA/QC report in accordance with United States Environmental Protection (USEPA) Region II guidelines, which includes an evaluation of field and laboratory data and data usability reports.

1.2.3 Analytical Laboratories

General responsibilities and duties of the analytical laboratories include:

- Perform sample analyses and associated laboratory QA/QC procedures;
- Supply sampling containers and shipping cartons;
- Maintain laboratory custody of sample; and
- Strictly adhere to all protocols in the QAPP.

Project Manager
Responsibilities and duties include:

- Serve as primary communication link between BBL and laboratory technical staff;
- Monitor workloads and ensure availability of resources;
- Oversee preparation of analytical reports; and
- Supervise in-house chain-of-custody (COC).

Quality Assurance Manager
Responsibilities and duties include:

- Supervise personnel reviewing and inspecting all project-related laboratory activities; and
- Conduct audits of all laboratory activities.

1.2.4 NYSDEC

Project Manager
Responsibilities and duties include:

- Provide NYSDEC review and approval of the RI Work Plan, supporting documents, and future deliverables; and
- Monitor progress of site activities.

Quality Assurance Manager
Responsibilities and duties include:

- Review and approval of the QAPP;
- Review of the QA/QC portion of any submitted report;
- Monitor progress of the RI;
- Ensure that all activities are performed in compliance with applicable federal, state, and regional requirements; and
- Perform field and laboratory audits, if necessary.

2. Project Background

2.1 Site Location and Description

The site is located in the City of Binghamton, in Broome County, New York. A site location map is included as Figure 1 of the RI Work Plan. The former MGP occupies approximately 1.4 acres of land within a city block bounded by Washington Street to the east, Water Street to the west, Susquehanna Street to the north, and Riverside Drive to the south. The site currently includes two, 2-story commercial buildings, associated parking lots, and a residential (apartment) building. One of the two commercial buildings is used by Rexel Electric Supply (formerly Wehle Electric) as an electrical supply warehouse and showroom. This building is scheduled to be demolished in mid-2005 in connection with planned brownfield redevelopment activities. The other commercial building is used by the American Automobile Association (AAA) as an office/travel center. This building is not included in redevelopment plans. The site is presently bounded to the north and south by various commercial buildings and parking lots, to the east by a highway access ramp, and to the west by an industrial property and the Chenango River. The layout of the site and the surrounding area is shown on Figure 2 of the RI Work Plan.

2.2 Site History and Summary of Activities

Based on available NYSEG records, the Washington Street MGP was first operated by the Binghamton Gas Light Company in 1853. The plant initially provided gas by the coal carbonization process and later (around 1884) by the carbureted water gas process. Based on review of Sanborn maps, the site apparently contained the following major structures: two gas holders in the central portion of the site (Holder #1 and #2); various purifiers, super heaters, and several sheds north of the two gas holders; and offices in the western portion of the site. The suspected former locations of these structures (as depicted on a Sanborn map dated 1887) are shown on Figure 2 of the RI Work Plan.

NYSEG records indicate that in 1887 the Binghamton Gas Light Company merged with Brush-Swan Electric Light Company to become Binghamton Gas and Electric Company. The Washington Street MGP ceased operations in 1888, and the land was sold when gas manufacture was consolidated with another plant in the City of Binghamton (the former Court Street MGP). Based on review of Sanborn mapping, all abovegrade MGP-related structures had been demolished by 1891, except for the former gas holder closest to Washington Street (Holder #1). As discussed below, Holder #1 was razed sometime between 1918 and 1950.

Sanborn mapping indicates that a lumber yard and carpentry shop occupied a portion of the site after MGP operations ceased. By the early 1900s, the majority of the former MGP had been redeveloped as the Larrabee-Deyo Motor Truck Company, which included a machine shop and assembly building in the western portion of the site (part of the existing Rexel Electric Supply building), a warehouse within former Holder #1, and an office/showroom in the eastern portion of the site. As indicated by Sanborn mapping, the warehouse/former Holder #1 was razed sometime between 1918 and 1950. By 1950, the site was occupied primarily by an automobile sales and service station and used car lot. A plumbing supply building had been constructed at the current location of the AAA building, and a gas station had been constructed south of the former MGP (at the location of the Henneken's building as shown on Figure 2 of the RI Work Plan).

Land use in the vicinity of the former MGP has historically been commercial/industrial. A large tannery, which later became an Endicott Johnson shoe factory, was formerly located east of the MGP on property now occupied by a highway access ramp. In addition, a carriage manufacturing facility with a paint shop was formerly located north of the MGP on property now occupied by a ski and bike shop (Berger's Ski Shop).

A Phase I Environmental Site Assessment of what is now the Rexel Electric Supply (formerly Wehle Electric) property was performed by Dunn Geoscience Corporation in August 1990. The assessment included a visual inspection of the property, a review of historical database listings, and a review of local and regional geologic/hydrogeologic conditions. Based on the visual inspection, Dunn identified the potential presence of a UST within the former Holder #1 footprint.

Based on review of a report titled *Phase II Groundwater Investigation Report* prepared by Dunn Geoscience Corporation (Dunn, September 1991), heating oil for the existing Rexel Electric Supply (previously Wehle Electric) building was formerly stored within a 6,000 gallon underground storage tank (UST) located within the footprint of Holder #1. The UST and approximately 65 cubic yards (CY) of stained soils around/below the tank were removed in January 1991. A concrete wall, likely the foundation wall of the former gas holder, was uncovered during excavation activities. A concrete floor was not encountered at the bottom of the excavation, either because the holder had an earthen bottom or the tank excavation did not extend as far as the bottom of the former holder (the depth of the UST excavation was not identified in the *Phase II Groundwater Investigation Report*).

A groundwater investigation (the Phase II Groundwater Investigation) was performed after impacted soils around the tank were removed. The investigation included the installation of two temporary wells within the UST excavation during January 1991 (wells PW-1 and PW-2) and three permanent monitoring wells around the excavation during March 1991 (wells MW-1 through MW-3). The locations of the temporary and permanent monitoring wells are shown on Figure 2 of the RI Work Plan. Groundwater samples were collected from each well (except PW-2) during May 1991. Each sample was submitted for laboratory analysis for volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Method 503.1 and petroleum hydrocarbon identification using New York State Department of Health (NYSDOH) Method 310-14. Select VOCs were identified in samples collected from wells PW-1 and MW-3 at concentrations that exceeded the groundwater quality standards presented in 6 NYCRR Part 703. Results of the sampling are presented in the *Phase II Groundwater Investigation Report* and summarized in the RI Work Plan.

2.3 Current Status

NYSEG is currently preparing an application for the site to enter the New York State Brownfield Cleanup Program (BCP). The RI will be performed to support site redevelopment under the BCP.

3. Project Description

This section presents a description of the investigation activities to be conducted during the RI. Sampling activities associated with the RI will be conducted under the following tasks:

- Soil investigation;
- Groundwater investigation; and
- Sediment investigation (if necessary).

Sampling protocols to be followed during the investigation activities are detailed in the FSP. Samples collected during the investigation will be analyzed in accordance with USEPA SW-846 Test Methods for Evaluating Solid Waste, with NYSDEC Analytical Services Protocol (ASP) Revision 2000. Table 2 presents a list of the constituents that will be analyzed for samples collected as part of the RI. Health and safety protocols to be followed by field personnel during completion of the investigation activities are discussed in the Health and Safety Plan (HASP).

A brief description of the objectives for each task associated with the RI is presented below. A more detailed description can be found in the associated RI Work Plan.

3.1 Soil Investigation

The objectives of the soil investigation are to:

- determine the presence and level of MGP-related and other constituents in soils at and in the vicinity of the site;
- assess the construction and condition of former MGP structures and the potential presence of MGP-related impacts associated with the structures; and
- obtain visual and analytical data to develop a site conceptual model.

In addition to the objectives outlined above, the subsurface information collected as part of this investigation will be used to characterize the distribution and saturated thickness of underlying materials. This information is important in understanding how shallow groundwater is moving and whether there are areas where DNAPL, if present, could preferentially collect or migrate.

3.2 Groundwater Investigation

The objectives of the groundwater investigation are to:

- characterize groundwater-flow patterns in the penetrated overburden;
- assess the hydraulic characteristics of the overburden; and
- assess the presence and level of MGP-related constituents dissolved in groundwater at concentrations exceeding NYSDEC Class GA Standards, if any.

3.3 Sediment Investigation

If a sediment investigation were to be performed, the objectives would be to:

- identify deposits of near-shore, river-laid sediments (if any) through reconnaissance and probing;
- identify erosional and/or depositional areas along the river through reconnaissance and probing;
- determine whether sheens are observed when the riverbed is disturbed during probing, and (if so) characterize the extent of the sheen producing reaches;
- characterize the quality of river sediment by collecting samples upstream, adjacent to, and downstream of the site and analyzing the samples for potential constituents of interest;
- assess the vertical distribution of MGP-related impacts in sediment (if any);
- segregate MGP-related impacts from background sources (if necessary) by performing a preliminary source evaluation of chemical constituents detected in sediment samples;
- obtain a better understanding of river characteristics and hydraulics; and
- obtain visual and analytical data to update the site conceptual model.

3.4 Approach

It is currently anticipated that the RI will be implemented in at least two phases. The first phase will include a soil and groundwater investigation at the former MGP site. After the existing Rexel Electric Supply building is demolished, a second phase will be performed and will include soil investigation activities within the footprint of the demolished building. If needed based on the results of the Phase I and Phase II activities, a third phase will be performed and will include a sediment investigation in the Chenango River west of the site. Additional investigation may be needed to delineate the extent of constituents of interest in environmental media. Samples collected during the investigation will be analyzed in accordance with the methods presented in this QAPP.

3.5 Project Schedule

The project schedule is presented in the RI Work Plan.

4. Quality Objectives and Criteria for Measurement Data

The DQO process, as described in the USEPA EPA QA/G-4 QAPP instructions document, is intended to provide a "logical framework" for planning field investigations. The following section addresses, in turn, each of the seven sequential steps in the EPA QA/G-4 QAPP DQO process.

Step 1: Problem Statement
The RI will be conducted at the Binghamton (Washington Street) Former MGP Site in at least two phases to identify the possible constitutes of concern at the Site. The sampling and analysis program is intended to generate data to supplement the existing site database to support a human exposure evaluation and evaluation of potential remedial alternatives.

Step 2: Decision Identification
The initial use of the data is descriptive (distribution and concentration) and there is no decision point for this descriptive application. Subsequent to review of the descriptive information, an exposure evaluation will be performed based on the findings of the Site investigation. The decision in this case is to determine the potential presence and significance of complete exposure pathways based on the distribution and concentrations of constituents of concern present at the Site.

Step 3: Identifying Decision Inputs
Decision inputs incorporate both concentration and distribution of constitutes of concern in site media. A fundamental basis for decision-making is that a sufficient number of data points of acceptable quality are available from the investigation to support the decision. Thus, the necessary inputs for the decision are: 1) the proportion of non-rejected (usable) data points; and 2) the quantity of data needed to evaluate whether there are unacceptable risk to human health and the environment at the Site.

The data will be evaluated for completeness, general conformance with requirements of this QAPP, and consistency among data sets and with historical data, as appropriate.

Step 4: Defining the Study Boundaries
The Site includes the area within a city block in Binghamton, NY bounded by Washington Street to the east, Water Street to the west, Susquehanna Street to the north, and Riverside Drive to the south. The study boundaries will include soils within this area, and groundwater beneath and hydraulically downgradient of the Site. Based on the findings of the soil and groundwater investigation, the study boundaries may be expanded to include sediment within the Chenango River adjacent to the site

Step 5: Developing a Decision Rule
The decision on whether data can be used in the exposure evaluation will be based on the validation results. Following validation, the data will be flagged, as appropriate, and any use restrictions noted. The sampling plan has been devised so that the loss of any single data point will not hinder description of the distribution of constitutes of concern or the development of a risk assessment. Given this, a reasonable decision rule would be that 90% of the data points not be rejected and deemed unusable for exposure evaluation purposes. Applicable actions would be evaluated, if needed based on the results of the exposure evaluation.

Step 6: Limits on Decision Errors
Specifications for this step call for: 1) giving forethought to corrective actions to improve data usability; and 2) understanding the representative nature of the sampling design. This QAPP has been designed to meet both specifications for this step. The sampling and analysis program has been developed based on a review of previous site data and knowledge of present Site conditions. Corrective actions are described elsewhere in the document and in the appended documents. The representative nature of the sampling design has been assured by discussions among professionals familiar with the Site and the appropriate government agencies.

Step 7: Design Optimization
The overall quality assurance objective is to develop and implement procedures for field sampling; COC, laboratory analysis, and reporting that will provide results to support the evaluation of the site data consistent with National Contingency Plan (NCP) requirements. Specific procedures for sampling, COC, laboratory instrument calibration, laboratory analysis, data reporting, internal quality control, audits, preventive maintenance of field equipment, and corrective action are described in other sections of this QAPP.

The sampling plan involves a phased approach to both sampling and analysis. This provides the opportunity to evaluate and focus each data collection step to optimize the overall data collection process.

A DQO summary for the sampling investigation efforts is presented in the subsequent section. The summary consists of stated DQOs relative to data uses, data types, data quantity, sampling and analytical methods, and data measurement performance criteria.

4.1 Data Categories

Three data categories have been defined to address various analytical data uses and the associated QA/QC effort and methods required to achieve the desired levels of quality. These categories are:

Screening Data: Screening data affords a quick assessment of site characteristics or conditions. This DQO is applicable to data collection activities that involve rapid, non-rigorous methods of analysis and quality assurance. This objective is generally applied to physical and/or chemical properties of samples, degree of contamination relative to concentration differences, and preliminary health and safety assessment.

Screening Data with Definitive Confirmation: Screening data allows rapid identification and quantitation, although the quantitation can be relatively imprecise. This DQO is available for data collection activities that require qualitative and/or quantitative verification of a select portion of sample findings (10% or more). This objective can also be used to verify less rigorous laboratory-based methods.

Definitive Data: Definitive data are generated using analytical methods such as approved USEPA reference methods. Data are analyte-specific, with confirmation of analyte identity and concentration. Methods produce raw data (e.g., chromatograms, spectra, digital values) in the form of paper printouts or computer-generated electronic files.

It is anticipated that both screening and definitive data categories will be used during the investigation. Field parameters (e.g., turbidity, conductivity, temperature, and pH) which will be obtained during water column sampling for use in qualitatively interpreting other site data will be determined using screening techniques. All remaining parameters will be determined using definitive techniques.

For this project, three levels of data reporting have been defined. They are as follows:

Level 1 – Minimal Reporting: Minimal or "results only" reporting is used for analyses that, either due to their nature (i.e., field monitoring) or the intended data use (i.e., preliminary screening), do not generate or require extensive supporting documentation.

Level 2 – Modified Reporting: Modified reporting is used for analyses that are performed following standard USEPA-approved methods and QA/QC protocols and that, based on the intended data use, require some supporting documentation but not, however, full "CLP-type" reporting.

Level 3 – Full Reporting: Full "CLP-type" reporting is used for those analyses that, based on intended data use, require full documentation. This reporting level would include ASP Superfund and Category B reporting.

The analytical methods to be used during the RI will be USEPA SW-846 methods with NYSDEC ASP Revision 2000, QA/QC requirement, and Category B reporting deliverables.

4.2 Field Investigations

As part of the RI, field investigations will be conducted to support the DQOs. Details of the field sampling investigations are described in the RI Work Plan.

5. Special Training Requirements/Certification

In compliance with the Occupational Safety and Health Administration's (OSHA) final rule, "Hazardous Waste Operations and Emergency Response," 29 CFR §1910.120(e), all personnel performing RI activities at the Site will have completed the requirements for OSHA 40-Hour Hazardous Waste Operations and Emergency Response training. Persons in field supervisory positions will have also completed the additional OSHA 8-Hour Supervisory Training.

6. Documentation and Records

6.1 General

Samples of the various media will be collected as described in the RI Work Plan. Detailed descriptions of the documentation and reporting requirements are presented below.

6.2 Sample Designation System

6.2.1 Sample Codes

Samples will be identified with a unique designation system that will facilitate sample tracking. The sample designation system to be employed during the sampling activities will be consistent, yet flexible enough to accommodate unforeseen sampling events and conditions. An alpha-numeric system is considered appropriate and will be used by field personnel to assign each sample with a unique sample identification number. The sample identification number will begin with a two-letter prefix indicating the sample location Washington Street – "WS", followed by two letters indicating the sample type and two digits indicating the sequential sample number collected from the location.

The samples types will be designated using the following codes:

- Soil Boring – "SB"
- Sediment – "SD"
- Groundwater – "MW"
- Trip Blank – "TB"
- Equipment Blank – "EB"

The two-digit sample number beginning with "01" will be assigned in the field and incremented by one as samples are collected from one to the next.

- Where necessary, the code system will be supplemented to accommodate additional sample identification information. For example, the code for soil and sediment samples will include a qualifier to identify the section increment (e.g., 0 to 0.5 feet).

Additional sample volumes collected for matrix spike (MS) and matrix spike duplicate (MSD) analysis will be noted on the COC forms, and the associated additional sample containers will be labeled with the appropriate suffix (MS or MSD). Rinse blanks will use to same coding scheme noted above, substituting the location code with the prefix "RB" (e.g., the first rinse blank associated with sediment collection would be named RBSD01). Field duplicates will be labeled as ordinary field samples with a unique identification number (e.g., the first field duplicate associated with sediment collection would be named DUPSD01). Duplicate samples will not be identified and the laboratory will analyze them as "blind" quality control samples.

6.2.2 Field Documentation

Field personnel will provide comprehensive documentation covering all aspects of field sampling, field analysis, and sample COC. This documentation constitutes of a record that allows reconstruction of all field events to aid in the data review and interpretation process. All documents, records, and information relating to the performance of the field work will be retained in the project file.

The various forms of documentation to be maintained throughout the action include:

- Daily Production Documentation - A field notebook consisting of a waterproof, bound notebook that will contain a record of all activities performed at the Site.

- Sampling Information - Detailed notes will be made as to the exact sampling location, physical observations, and weather conditions (as appropriate).

- Sample COC – COC forms will provide the record of responsibility for sample collection, transport, and submittal to the laboratory. COC forms will be filled out at each sampling site, at a group of sampling sites, or at the end of each day of sampling by BBL's field personnel designated to be responsible for sample custody. In the event the samples are relinquished by the designated sampling person to other sampling or field personnel, the COC form will be signed and dated by the appropriate personnel to document the sample transfer. The original COC form will accompany the samples to the laboratory, and copies will be forwarded to the project files. A sample COC form is included in Attachment A.

  Persons will have custody of samples when the samples are in their physical possession, in their view after being in their possession, or in their physical possession and secured so they cannot be tampered with. In addition, when samples are secured in a restricted area accessible only to authorized personnel, they will be deemed to be in the custody of such authorized personnel.

- Field Equipment, Calibration, and Maintenance Logs - To document the calibration and maintenance of field instrumentation, calibration and maintenance logs will be maintained for each piece of field equipment that is not factory-calibrated.

6.3 Laboratory Documentation Files

6.3.1 Laboratory Project Files

The laboratory will establish a file for all pertinent data. The file will include all correspondence, faxed information, phone logs, and COC forms. The laboratory will retain all project files and data packages for a period of 5 years.

6.3.2 Laboratory Logbooks

Workbooks, bench sheets, instrument logbooks, and instrument printouts will be used to trace the history of samples through the analytical process and document important aspects of the work, including the associated quality controls. As such, logbooks, bench sheets, instrument logs, and instrument printouts will be part of the permanent record of the laboratory.

Each page or entry will be dated and initialed by the analyst at the time of entry. Errors in entry will be crossed out in indelible ink with a single stroke, corrected without the use of white-out or by obliterating or writing directly over the erroneous entry, and initialed and dated by the individual making the correction. Pages of logbooks that are not used will be completed by lining out unused portions.

Information regarding the sample, analytical procedures performed, and the results of the testing will be recorded on laboratory forms or personal notebook pages by the analyst. These notes will be dated and will also identify the analyst, the instrument used, and the instrument conditions.

Laboratory notebooks will be periodically reviewed by the laboratory group leaders for accuracy, completeness, and compliance to this QAPP. All entries and calculations will be verified by the laboratory group leader. If all entries on the pages are correct, then the laboratory group leader will initial and date the pages. Corrective action will be taken for incorrect entries before the laboratory group leader signs.

6.3.3 Computer Tape and Hard Copy Storage

All electronic files and deliverables will be retained by the laboratory for not less than 5 years; hard copy data packages (or electronic copies) will also be retained for not less than 5 years.

6.4 Data Reporting Requirements

Data will be reported both in the field and by the analytical laboratory, as described below.

6.4.1 Field Data Reporting

Information collected in the field through visual observation, manual measurement, and/or field instrumentation will be recorded in field notebooks or data sheets and/or on forms. Such data will be reviewed by the appropriate Task Manager for adherence to the FSP and for consistency. Concerns identified as a result of this review will be discussed with the field personnel, corrected if possible, and, as necessary, incorporated into the data evaluation process.

If applicable, field data forms and calculations will be processed and included in appendices to the appropriate reports (when generated). The original field logs, documents, and data reductions will be kept in the project file at the BBL office in Syracuse, New York.

6.4.2 Laboratory Data Reporting

The laboratory is responsible for preparing ASP Category B data packages for all VOC, SVOC, inorganics, total cyanide and TOC data, reduced data packages, and case narratives for all other analyses.

All data reports for all parameters will include, at a minimum, the following items:

Narrative: Summary of activities that took place during the course of sample analysis, including the following information:

- laboratory name and address;
- date of sample receipt;
- cross reference of laboratory identification number to contractor sample identification;
- analytical methods used;
- deviations from specified protocol; and
- corrective actions taken.

Included with the narrative will be any sample handling documents, including field and internal COC forms, air bills, and shipping tags.

Analytical Results: Reported according to analysis type and including the following information, as acceptable:

- sample ID;
- laboratory ID;
- date of collection;
- date of receipt;
- date of extraction;
- date of analysis; and
- detection limits.

Sample results on the report forms will be collected for dilutions. Soil samples will be reported on a dry weight basis. Unless otherwise specified, results will be reported uncorrected for blank contamination.
The data for VOCs, SVOCs, PCBs, inorganics, total cyanide, and TOC analyses will be expanded to include all supporting documentation necessary to provide a Category B package. This additional documentation will include, but is not limited to, all raw data required to recalculate any result, including printouts, chromatograms, and quantitation reports. The report also will include standards used in calibration and calculation of analytical results; sample extraction, digestion, and other preparation logs; standard preparation logs, instrument run logs; and moisture content calculations.

6.5 Project File

Project documentation will be placed in project files according to BBL requirements identified in the corporate quality procedure (QP 1.02) for document management. Project files typically consist of the following components:

1. Agreements/Proposals (filed chronologically)
2. Change Orders/Purchase Orders (filed chronologically)
3. Invoices (filed chronologically)
4. Project Management (filed by topic)
5. Correspondence (filed chronologically)
6. Notes and Data (filed by topic)
7. Public Relations Information (filed by topic)
8. Regulatory Documents (filed chronologically)
9. Marketing Documents (filed chronologically)

10. Final Reports/Presentations (filed chronologically)
11. Draft Reports/Presentations (filed chronologically)
12. Documents Prepared by Others (filed chronologically)

Final reports (including QAPPs and quality assurance reports) are filed in folder #10 – Final Reports/Presentations. Analytical laboratory documentation (when received) and field data are filed in folder #6 – Notes and Data. Filed materials may be removed and signed out by authorized personnel on a temporary basis only.

7. Sampling Process Design

Information regarding the sampling design and rationale and associated sampling locations can be found in the RI Work Plan.

8. Sampling Method Requirements

Source materials, groundwater, soil, and sediment samples will be collected as described in the RI Work Plan and the FSP. The FSP also contains procedures that will be followed to drill and sample soil borings; install and develop monitoring wells; measure water levels; collect groundwater samples; probe and sample sediment; perform field measurements; and handle, package, and ship collected samples.

9. Sample Handling and Custody Requirements

9.1 Sample Containers and Preservation

Appropriate sample containers, preservation methods, and laboratory holding times for RI samples are shown in Table 4.

The analytical laboratory will supply appropriate sample containers and preservatives, as necessary. The bottles will be purchased pre-cleaned according to USEPA Office of Solid Waste and Emergency Response (OSWER) Directive 9240.05A requirements. The field personnel will be responsible for properly labeling containers and preserving samples (as appropriate). Sample labeling procedures are discussed in Section 9.2.2.

9.2 Field Custody Procedures

The objective of field sample custody is to assure that samples are not tampered with from the time of sample collection through time of transport to the analytical laboratory. Persons will have “custody of samples” when the samples are in their physical possession, in their view after being in their possession, or in their physical possession and secured so they cannot be tampered with. In addition, when samples are secured in a restricted area accessible only to authorized personnel, they will be deemed to be in the custody of such authorized personnel.

Field custody documentation consists of both field logbooks and field COC forms.

9.2.1 Field Logbooks

Field logbooks will provide the means of recording data collecting activities performed. As such, entries will be described in as much detail as possible so that persons going to the Site could reconstruct a particular situation without reliance on memory.

Field logbooks will be bound field survey books or notebooks. Logbooks will be assigned to field personnel, but will be stored in a secure location when not in use. Each logbook will be identified by the project-specific document number. The title page of each logbook will contain the following:

- Person to whom the logbook is assigned;
- Logbook number;
- Project name;
- Project start date; and
- End date.

Entries into the logbook will contain a variety of information. At the beginning of each entry, the date, start time, weather, names of all sampling team members present, level of personal protection being used, and the signature of the person making the entry will be entered. The names of visitors to the Site, field sampling or investigation team personnel, and the purpose of their visit will also be recorded in the field logbook.

Measurements made and samples collected will be recorded. Entries will be made in ink, and no erasures will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark. Whenever a sample is collected or a measurement is made, a detailed description of the location of the station shall be recorded. The number of the photographs taken of the station, if any, will also be noted. All equipment used to make measurements will be identified, along with the date of calibration.

Samples will be collected following the sampling procedures documented in FSP. The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth at which the sample was collected, volume, and number of containers. Sample identification numbers will be assigned prior to sample collection. Field duplicate samples, which will receive an entirely separate sample identification number, will be noted under sample description.

9.2.2 Sample Labeling

Preprinted sample labels will be affixed to sample bottles prior to delivery at the sampling site. The following information is required on each sample label:

- Project;
- Date collected;
- Time collected;
- Location;
- Sampler;
- Analysis to be performed;
- Preservative; and
- Sample number.

9.2.3 Field COC Forms

Completed COC forms will be required for all samples to be analyzed. COC forms will be initiated by the sampling crew in the field. The COC forms will contain the unique sample identification number, sample date and time, sample description, sample type, preservation (if any), and analyses required. The original COC form will accompany the samples to the laboratory. Copies of the COC will be made prior to shipment (or multiple copy forms used) for field documentation. The COC forms will remain with the samples at all times. The samples and signed COC forms will remain in the possession of the sampling crew until the samples are delivered to the express carrier (e.g., Federal Express) or hand delivered to a mobile or permanent laboratory, or placed in secure storage.

Sample labels will be completed for each sample using waterproof ink. The labels will include sample information such as: sample number and location, type of sample, date and time of sampling, sampler's name or initials, preservation, and analyses to be performed. The completed sample labels will be affixed to each sample bottle and covered with clear tape.

Whenever samples are split with a government agency or other party, a separate COC will be prepared for those samples and marked to indicate with whom the samples are being split. The person relinquishing the samples to the facility or agency should request the representative's signature acknowledging sample receipt. If the representative is unavailable or refuses, this is noted in the "Received By" space.

9.3 Management of Investigation Derived Materials and Wastes

Management of investigation-derived materials and wastes will be performed consistent with the USEPA guidance *Guide to Management of Investigation – Derived Wastes*, 9345.3-03FS, dated January 1992. Disposable equipment (including personal protective equipment) and debris will be containerized and appropriately labeled during the sampling events, and will be disposed of accordingly. All purged groundwater and water generated during equipment decontamination will be containerized and temporally staged onsite in a 55-gallon drum, and will be disposed of appropriately based on analytical results. Equipment will be decontaminated, as appropriate, as discussed in FSP. All soil cuttings associated with drilling of soil borings will also be collected and temporally stored onsite in a 55-gallon drum(s), and disposed of properly following receipt of analytical results.

9.4 Packing, Handling, and Shipping Requirements

Sample packaging and shipment procedures are designed to insure that the samples will arrive at the laboratory, with the COC, intact.

Samples will be packaged for shipment as outlined below:

- Ensure that sample containers have the sample labels securely affixed to the container with clear packing tape;
- Check the caps on the sample containers to ensure that they are properly sealed;
- Wrap the sample container cap with clear packing tape to prevent it from becoming loose;
- Complete the COC form with the required sampling information and ensure that the recorded information matches the sample labels. NOTE: If the designated sampler relinquishes the samples to other sampling or field personnel for packing or other purposes, the sampler will complete the COC prior to this transfer. The appropriate personnel will sign and date the COC form to document the sample custody transfer;
- Using duct tape, secure the outside drain plug at the bottom of the cooler;
- Wrap sample containers in bubble wrap or other cushioning material;
- Place 1 to 2 inches of cushioning material at the bottom of the cooler;
- Place the sealed sample containers into the cooler;
- Place ice in plastic bags and seal. Place loosely in the cooler;
- Fill the remaining space in the cooler with cushioning material;
- Place COC forms in a plastic bag and seal. Tape the forms to the inside of the cooler lid;
- Close the lid of the cooler, lock, and secure with duct tape;
- Wrap strapping tape around both ends of the cooler at least twice; and
- Mark the cooler on the outside with the following information: shipping address, return address, “Fragile” labels, and arrows indicating “this side up.” Cover the labels with clear plastic tape. Place a signed custody seal over the sample cooler lid.

Samples will be hand-delivered or delivered by an express carrier within 48 hours of the time of collection. Shipments will be accompanied by the COC form identifying the contents. The original form will accompany the shipment; copies will be retained by the sampler for the sampling office records. If the samples are sent by common carrier, a bill of lading will be used. Receipts or bills of lading will be retained as part of the permanent project documentation. Commercial carriers are not required to sign off on the COC form as long as the forms are sealed inside the sample cooler and the custody seals remain intact.

Sample custody seals and packing materials for filled sample containers will be provided by the analytical laboratory. The filled, labeled, and sealed containers will be placed in a cooler on ice and carefully packed to eliminate the possibility of container breakage.

Additional procedures for packing, handling, and shipping environmental samples are presented in FSP.

9.5 Laboratory Custody Procedures

9.5.1 General

Upon sample receipt, laboratory personnel will be responsible for sample custody. The original field COC form will accompany all samples requiring laboratory analysis. The laboratory will use COC guidelines described in the USEPA guidance documents. Samples will be kept secured in the laboratory until all stages of analysis are complete. All laboratory personnel having samples in their custody will be responsible for documenting and maintaining sample integrity.

9.5.2 Sample Receipt and Storage

Immediately upon sample receipt, the laboratory sample custodian will verify the cooler seal, open the cooler, and compare the contents against the field COC. If a sample container is missing, a sample container is received broken, the sample is in an inappropriate container, or has not been preserved by appropriate means, BBL will be notified. The laboratory sample custodian will be responsible for logging the samples in, assigning a unique laboratory identification number to each sample, labeling the sample bottle with the laboratory identification number, and moving the sample to an appropriate storage location to await analysis. The project name, field sample code, date sampled, date received, analysis required, storage location and date, and action for final disposition will be recorded in the laboratory tracking system. Relevant custody documentation will be placed in the project file.

9.5.3 Sample Analysis

Analysis of an acceptable sample will be initiated by worksheets that contain all pertinent information for analysis. The analyst will sign and date the laboratory COC form when removing the samples from storage.

Samples will be organized into sample delivery groups (SDGs) by the laboratory. A SDG may contain up to 20 field samples (field duplicates, trip blanks, and rinse blanks are considered field samples for the purposes of SDG assignment). All field samples assigned to a single SDG shall be received by the laboratory over a maximum of 7 calendar days and must be processed through the laboratory (preparation, analysis, and reporting) as a group. Every SDG must include a minimum of one site-specific MS/MSD pair, which shall be received by the laboratory at the start of the SDG assignment.

9.5.4 Sample Storage Following Analysis

Samples will be maintained by the laboratory for at least one month after the final report is delivered to BBL. The laboratory will be responsible for the eventual and appropriate disposal of the samples. The analytical laboratory will inform BBL before any samples are disposed. Unused portions of the samples, sample extracts and associated wastes will be disposed of by the laboratory in accordance with applicable rules and regulations as specified in their SOP for waste disposal.

10. Analytical Method Requirements

10.1 Field Parameters and Methods

Field analytical procedures will include the measurement of pH, turbidity, temperature, conductivity, and groundwater levels. Specific field measurement protocols are provided in the FSP.

10.2 Laboratory Parameters and Methods

The methods listed below include the range of analyses expected to be performed. The associated laboratory SOPs can be found in the compact disc provided with this plan.

Laboratory analytical requirements presented in the sub-sections below include a general summary of requirements, specifics related to each sample medium to be analyzed, and details of the methods to be used for this project. SW-846 methods with NYSDEC ASP 2000 Revision, QA/QC, and reporting deliverables requirements will be used for all analytes.

10.2.1 General

The following tables summarize general analytical requirements:

Table	Title
Table 1	Environmental and Quality Control Sample Analyses
Table 3	Parameters, Methods, and Quantitation Limits
Table 4	Sample Containers, Preservation Methods, and Holding Times Requirements

10.2.2 RI Sample Matrices

10.2.2.1 Groundwater

Analyses will be performed following the methods listed in Table 1. Analytical results for all analyses will be reported in units identified in Table 3.

10.2.2.2 Soil and Sediment

Analyses in this category will relate to soil and sediment samples. Analyses will be performed following the methods listed in Table 1. Results will be reported as dry weight, in units presented in Table 3. Moisture content will be reported separately.

10.2.3 Analytical Requirements

The primary sources to describe the analytical methods to be used during the investigation are provided in USEPA SW-846 Test Methods for Evaluating Solid Waste, Third Edition, and USEPA Methods for Chemical Analysis of Water and Waste with NYSDEC ASP 2000 Revision, QA/QC, and reporting deliverables requirements. Detailed information regarding QA/QC is provided in NYSDEC ASP 2000 Revision, Exhibit E.

11. Quality Control Requirements

11.1 Quality Assurance Indictors

The overall quality assurance objective for this QAPP is to develop and implement procedures for sampling, COC, laboratory analysis, instrument calibration, data reduction and reporting, internal quality control, audits, preventive maintenance, and corrective action, such that valid data will be generated. These procedures are presented or referenced in the following sections of the QAPP. Specific quality control checks are discussed in Section 11.2.

Quality assurance indicators are generally defined in terms of five parameters:

1. Representativeness;
2. Comparability;
3. Completeness;
4. Precision; and
5. Accuracy.

Each parameter is defined below. Specific objectives for the site actions are set forth in other sections of this QAPP as referenced below.

11.1.1 Representativeness

Representativeness is the degree to which sampling data accurately and precisely represent site conditions, and is dependent on sampling and analytical variability and the variability of environmental media at the Site. The actions have been designed to assess the presence of the chemical constituents at the time of sampling. The RI Work Plan presents the rationale for sample quantities and location. This QAPP presents field sampling and laboratory analytical methodologies. The use of the prescribed field and laboratory analytical methods with associated holding times and preservation requirements are intended to provide representative data.

11.1.2 Comparability

Comparability is the degree of confidence with which one data set can be compared to another. Comparability between this investigation, and to the extent possible, with existing data will be maintained through consistent sampling and analytical methodology set forth in the FSP and this QAPP, SW-846 analytical methods with NYSDEC ASP Revision 2000, QA/QC requirements, and Category B reporting deliverables, and through use of QA/QC procedures and appropriately trained personnel.

11.1.3 Completeness

Completeness is defined as a measure of the amount of valid data obtained from an event and/or investigation compared to the total amount that was obtained. This will be determined upon final assessment of the analytical results, as discussed in Section 11.6.

11.1.4 Precision

Precision is the measure of reproducibility of sample results. The goal is to maintain a level of analytical precision consistent with the project objectives. To maximize precision, sampling and analytical procedures will be followed. All work for this investigation will adhere to established protocols presented in the RI Work Plan. Checks for analytical precision will include the analysis of MSDs, laboratory duplicates, and field duplicates. Checks for field measurement precision will include obtaining duplicate field measurements. Further discussion of precision quality control checks is provided in Section 11.4.

11.1.5 Accuracy

Accuracy is the deviation of a measurement from the true value of a known standard. Both field and analytical accuracy will be monitored through initial and continuing calibration of instruments. In addition, internal standards, MSs, blank spikes, and surrogates (system monitoring compounds) will be used to assess the accuracy of the laboratory analytical data. Further discussion of these quality control samples is provided in Section 11.5.

11.2 Field Quality Control Checks

11.2.1 Field Measurements

To verify the quality of data using field instrumentation, duplicate measurements will be obtained and reported for all field measurements. A duplicate measurement will involve obtaining measurements a second time at the same sampling location.

11.2.2 Sample Containers

Certified-clean sample containers in accordance with Exhibit I of the NYSDEC ASP Revision 2000 (Eagle Picher pre-cleaned containers or equivalent) will be supplied by the laboratory.

11.2.3 Field Duplicates

Field duplicates will be collected from the different site materials to verify the reproducibility of the sampling methods. Field duplicates will be prepared by placing well homogenized aliquots (except samples for VOC analysis) from the same sample location into individual sample containers, which are submitted blind to the laboratory. Field duplicate water samples and soil samples for VOC analysis will constitute co-located samples rather than homogenized aliquots. In general, field duplicates will be analyzed at a 5% frequency (every 20 samples) for the chemical constituents. Table 1 provides an estimated number of field duplicates to be prepared for each applicable parameter and matrix.

11.2.4 Rinse Blanks

Rinse blanks are used to monitor the cleanliness of the sampling equipment and the effectiveness of the cleaning procedures. Rinse blanks will be prepared and submitted for analysis once per day per matrix. Rinse blanks will be prepared by filling sample containers with analyte-free water (supplied by the laboratory) which has been routed through a cleaned sampling device. When dedicated sampling devices or sample containers are used to collect the samples, rinse blanks will not be necessary. Table 1 provides an estimated number of rinse blanks for environmental media samples to be collected during the RI.

11.2.5 Trip Blanks

Trip blanks will be used to assess whether site samples have been exposed to non-site-related volatile constituents during storage and transport. Trip blanks will be analyzed at a frequency of once per day, per cooler containing samples to be analyzed for volatile organic constituents. A trip blank will consist of a container filled with analyte-free water (supplied by the laboratory) which remains unopened with field samples throughout the sampling event. Trip blanks will only be analyzed for VOCs. Table 1 provides an estimated number of trip blanks collected for each matrix and parameter during the RI.

11.3 Analytical Laboratory Quality Control Checks

11.3.1 General

Internal laboratory quality control checks will be used to monitor data integrity. These checks will include method blanks, MS/MSDs, spike blanks, internal standards, surrogate samples, calibration standards, and reference standards. Project quality control limits for duplicates and MSs are identified in Table 2. Laboratory control charts will be used to determine long-term instrument trends.

11.3.2 Method Blanks

Sources of contamination in the analytical process, whether specific analyses or interferences, need to be identified, isolated, and corrected. The method blank is useful in identifying possible sources of contamination within the analytical process. For this reason, it is necessary that the method blank is initiated at the beginning of the analytical process and encompasses all aspects of the analytical work. As such, the method blank would assist in accounting for any potential contamination attributable to glassware, reagents, instrumentation, or other sources which could affect sample analysis. One method blank will be analyzed with each analytical series associated with no more than 20 samples.

11.3.3 MS/MSDs

MS/MSDs will be used to measure the accuracy of analyte recovery from the sample matrices and will be site-specific. MS/MSD pairs will be analyzed at a 5% frequency (every 20 samples or once every week, whichever comes first).

When MS recoveries are outside quality control limits, associated control sample and surrogate spike recoveries will be evaluated, as applicable, to attempt to verify the reason for the deviation and determine the effect on the reported sample results. Table 1 presents an estimated number of MS and MSD analyses for each applicable parameter.

11.3.4 Surrogate Spikes

Surrogates are compounds which are unlikely to occur under natural conditions that have properties similar to the analytes of interest. This type of control is primarily used for organic samples analyzed by gas chromatography/mass spectrometry (GC/MS) and gas chromatography (GC) methods and is added to the samples prior to purging or extraction. The surrogate spike is utilized to provide broader insight into the proficiency and efficiency of an analytical method on a sample-specific basis. This control reflects analytical conditions that may not be attributable to sample matrix.

If surrogate spike recoveries exceed specified quality control limits, the analytical results need to be evaluated thoroughly in conjunction with other control measures. In the absence of other control measures, the integrity of the data may not be verifiable and reanalysis of the samples with additional control may be necessary.

Surrogate spike compounds will be selected utilizing the guidance provided in the analytical methods.

11.3.5 Laboratory Duplicates

For inorganics, laboratory duplicates will be analyzed to assess laboratory precision. Laboratory duplicates are defined as a separate aliquot of an individual sample that is analyzed as a separate sample. Table 1 presents an estimated number of laboratory duplicates for each applicable parameter.

11.3.6 Calibration Standards

Calibration check standards analyzed within a particular analytical series provide insight regarding the instruments' stability. A calibration check standard will be analyzed at the beginning and end of an analytical series, or periodically throughout a series containing a large number of samples.

In general, calibration check standards will be analyzed after every 12 hours, or more frequently, as specified in the applicable analytical method. In analyses where internal standards are used, a calibration check standard will only be analyzed in the beginning of an analytical series. If results of the calibration check standard exceed specified tolerances, then all samples analyzed since the last acceptable calibration check standard will be reanalyzed.

Laboratory instrument calibration standards will be selected utilizing the guidance provided in the analytical methods, as summarized in Section 13.

11.3.7 Internal Standards

Internal standard areas and retention times will be monitored for organic analyses performed by GC/MS methods. Method-specified internal standard compounds will be spiked into all field samples, calibration standards, and quality control samples after preparation and prior to analysis. If internal standard areas in one or more samples exceed the specified tolerances, the cause will be investigated, the instrument will be recalibrated if necessary, and all affected samples will be reanalyzed.

The acceptability of internal standard performance will be determined using the guidance provided within the analytical methods.

11.3.8 Reference Standards/Control Samples

Reference standards are standards of known concentration and independent in origin from the calibration standards. The intent of reference standard analysis is to provide insight into the analytical proficiency within an analytical series. This includes preparation of calibration standards, validity of calibration, sample preparation, instrument set-up, and the premises inherent in quantitation. Reference standards will be analyzed at the frequencies specified within the analytical methods.

11.4 Data Precision Assessment Procedures

Field precision is difficult to measure because of temporal variations in field parameters. However, precision will be controlled through the use of experienced field personnel, properly calibrated meters, and duplicate field measurements. Field duplicates will be used to assess precision for the entire measurement system including sampling, handling, shipping, storage, preparation, and analysis.

Laboratory data precision for organic analyses will be monitored through the use of MS/MSD and laboratory duplicates as identified in Table 1.

The precision of data will be measured by calculation of the relative percent difference (RPD) by the following equation:

$$RPD = \frac{(A-B)}{(A+B)/2} \times 100$$

Where:

A = Analytical result from one of two duplicate measurements
B = Analytical result from the second measurement

Precision objectives for MSD and laboratory duplicate analyses are identified in the NYSDEC ASP Revision 2000 and contained in Table 2.

11.5 Data Accuracy Assessment Procedures

The accuracy of field measurements will be controlled by experienced field personnel, properly calibrated field meters, and adherence to established protocols. The accuracy of field meters will be assessed by review of calibration and maintenance logs.

Laboratory accuracy will be assessed via the use of MSs, surrogate spikes, internal standards, and reference standards. Where available and appropriate, quality assurance Performance Standards will be analyzed periodically to assess laboratory accuracy. Accuracy will be calculated in terms of percent recovery as follows:

$$\% \text{ Recovery} = \frac{A-X}{B} \times 100$$

Where:

A = Value measured in spiked sample or standard
X = Value measured in original sample
B = True value of amount added to sample or true value of standard

This formula is derived under the assumption of constant accuracy over the original and spiked measurements. If any accuracy calculated by this formula is outside of the acceptable levels, data will be evaluated to determine whether the deviation represents unacceptable accuracy, or variable, but acceptable accuracy. Accuracy objectives for MS recoveries and surrogate recovery objectives are identified in the NYSDEC ASP 2000 Revision and contained in Table2.

11.6 Data Completeness Assessment Procedures

Completeness of a field or laboratory data set will be calculated by comparing the number of valid sample results generated to the total number of results generated.

$$\text{Completeness} = \frac{\text{Number valid results}}{\text{Total number of results generated}} \times 100$$

As a general guideline, overall project completeness is expected to be at least 90%. The assessment of completeness will require professional judgment to determine data usability for intended purposes.

12. Instrument/Equipment Testing, Inspection, and Maintenance Requirements

12.1 General

Testing and maintenance schedules have been developed for both field and laboratory instruments. A summary of the testing and maintenance activities to be performed is presented below.

12.2 Field Instruments and Equipment

Prior to field sampling, each piece of field equipment will be inspected to ensure that it is operational. If the equipment is not operational, it will be serviced prior to its use. All meters which require charging or batteries will be fully charged and have fresh batteries. If instrument servicing is required, it is the responsibility of the appropriate Task Manager or field personnel to follow the maintenance schedule and arrange for timely service. Field instruments will be maintained according to the manufacturers' instructions.

Logbooks will be kept for each field instrument. Each logbook will contain records of operation, maintenance, calibration, and any problems and repairs. Logbooks for each piece of equipment shall be maintained in project records. The Task Managers will review calibration and maintenance logs.

12.2.1 Equipment Maintenance

All measuring and test equipment to be used in support of the RI activities that directly affect the quality of the analytical data shall be subject to preventative maintenance measures that minimize equipment downtime. Equipment will be examined to certify that it is in operating condition. This includes checking the manufacturer's operating manual to ensure that all maintenance requirements are being observed. Field notes from previous sampling events will be reviewed to ensure that any prior equipment problems are not overlooked and that any necessary repairs to equipment have been carried out.

Field equipment returned from a site will be inspected to confirm that it is in working order. The inspection will be recorded in the logbook or field notebooks, as appropriate. It will also be the obligation of the last user to record any equipment problems in the logbook. Non-operational field equipment will either be repaired or replaced. Appropriate spare parts will be made available for field meters.

Consultant-/subcontractor-owned or leased equipment maintenance shall be in accordance with the manufacturer's instructions.

12.3 Laboratory Instruments and Equipment

12.3.1 General

Laboratory instrument and equipment documentation procedures include details of any observed problems, corrective measure(s), routine maintenance, and instrument repair (which will include information regarding the repair and the individual who performed the repair).

Preventive maintenance of laboratory equipment generally will follow the guidelines recommended by the manufacturer. A malfunctioning instrument will be repaired immediately by in-house staff or through a service call from the manufacturer.

12.3.2 Instrument Maintenance

Maintenance schedules for laboratory equipment adhere to the manufacturer's recommendations. Records reflect the complete history of each instrument and specify the time frame for future maintenance. Major repairs or maintenance procedures are performed through service contracts with manufacturer or qualified contractors. Paperwork associated with service calls and preventative maintenance calls will be kept on file by the laboratory.

Laboratory Systems Managers are responsible for the routine maintenance of instruments used in the particular laboratory. Any routine preventative maintenance carried out is logged into the appropriate logbooks. The frequency of routine maintenance is dictated by the nature of samples being analyzed, the requirements of the method used, and/or the judgment of the Laboratory Systems Manager.

All major instruments are backed up by comparable (if not equivalent) instrument systems in the event of unscheduled downtime. An inventory of spare parts is also available to minimize equipment/instrument downtime.

12.3.3 Equipment Monitoring

On a daily basis, the operation of balances, incubators, ovens, refrigerators, and water purification systems will be checked and documented. Any discrepancies will be immediately reported to the appropriate laboratory personnel for resolution.

13. Instrument Calibration and Frequency

13.1 Field Instruments and Equipment

The calibration of field instruments is governed by specific SOPs documented in the FSP for the applicable field analysis method, and such procedures take precedence over the following discussion.

Field personnel are responsible for ensuring that a master calibration/maintenance log is maintained following the procedures specified for each measuring device. Where applicable, each log will include, at a minimum, the following information:

- Name of device and/or instrument calibrated;
- Device/instrument serial/identification numbers;
- Calibration method;
- Tolerance;
- Calibration standard used;
- Frequency of calibration;
- Date(s) of calibration(s); and
- Name of person(s) performing calibration(s).

Instruments and equipment used to gather, generate, or measure environmental data will be calibrated at the intervals specified by the manufacturer or more frequently, and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specifications. In the event that an internally calibrated field instrument fails to meet calibration/checkout procedures, it will be returned to the manufacturer for service. Equipment found to be out of tolerance during the period of use shall be removed from the field and measuring and testing activities performed using the equipment shall be addressed via the corrective action system described in Section 17.4 of this QAPP.

13.2 Laboratory Instrument and Equipment

Instrument calibration will follow the specifications provided by the instrument manufacturer or specific analytical method used. The analytical methods for target constituents are identified separately below.

<u>VOCs</u>
Equipment calibration procedures will follow guidelines presented in NYSDEC ASP 2000 Revision, Exhibit E, Part III.

<u>SVOCs</u>
Equipment calibration procedures will follow guidelines presented in NYSDEC ASP 2000 Revision, Exhibit E, Part IV.

<u>PCBs</u>
Equipment calibration procedures will follow guidelines presented in NYSDEC ASP 2000 Revision, Exhibit E, Part V.

Metals and Cyanide (total)
Equipment calibration procedures will follow guidelines presented in NYSDEC ASP 2000 Revision, Exhibit E, Part VII.

TOC
Equipment calibration procedures will follow guidelines presented in Lloyd Kahn Method.

When analyses are conducted according to the USEPA SW-846 methods, the calibration procedures and frequencies specified in the applicable method will be followed, as noted in the attached SOPs (see compact disc). For analyses governed by SOPs, see the appropriate SOP for the required calibration procedures and frequencies. Records of calibrations will be filed and maintained by the laboratory. These records will be subject to quality assurance audit. For all instruments, the laboratory will maintain trained repair staff with in-house spare parts or will maintain service contracts with vendors.

All standards used in the calibration of equipment are traceable, directly or indirectly, to National Institute of Standards and Technology (NIST). All standards received shall be logged into standard receipt logs maintained by the individual analytical groups. Each group shall maintain a standards log which tracks the preparation of standards used for calibration and quality control purposes.

14. Inspection/Acceptance Requirements for Supplies and Consumables

All supplies to be used in the field and laboratory will be available when needed. They will be free of target chemicals and interferences. All reagents will be tested prior to use with site samples. All standards will be verified against a second source standard. The laboratory will follow a "first in first out" procedure for the storage and use of all consumables to minimize the risk of contamination and degradation. The various supplies and consumables required on-site are noted in the various field SOPs included FSP.

15. Data Acquisition Requirements for Non-Direct Measurements

At this point in time, historical data generated by outside parties is not anticipated to be used directly in completing the RI. However, historical data will be used as guidance in determining sampling locations for the RI.

Prior to their use, historic data sets will be reviewed according to the procedures identified in subsequent sections of this QAPP to determine the appropriate uses of such data. The extent to which these data can be validated will be determined by the analytical level and QC data available. The evaluation of historic data for RI purposes requires the following:

- Identification of analytical levels;
- Evaluation of QC data, when available; and
- Development of conclusions regarding the acceptability of the data for intended uses.

Acceptability of historic data for intended uses will be determined by application of these procedures and professional judgment. If the historic data quality cannot be determined, its use will be limited to general trend evaluations.

16. Data Management

The purpose of the data management is to ensure that all of the necessary data are accurate and readily accessible to meet the analytical and reporting objectives of the project. The field investigations will encompass a large number of samples and analytes from a large geographic area. Due to the large amount of resulting data, the need arises for a structured, comprehensive, and efficient program for management of data.

The data management program established for the project includes field documentation and sample QA/QC procedures, methods for tracking and managing the data, and a system for filing all site-related information. More specifically, data management procedures will be employed to efficiently process the information collected such that the data are readily accessible and accurate. These procedures are described in detail in the following section.

The data management plan has five elements: 1) sample designation system; 2) field activities; 3) sample tracking and management; 4) data management system; and 5) document control and inventory.

16.1 Sample Designation System

A concise and easily understandable sample designation system is an important part of the project sampling activities. It provides a unique sample number that will facilitate both sample tracking and easy re-sampling of select locations to evaluate data gaps, if necessary. The sample designation system to be employed during the sampling activities will be consistent, yet flexible enough to accommodate unforeseen sampling events or conditions. A combination of letters and numbers will be used to yield a unique sample number for each field sampled collected, as outlined in Section 6.2.1.

16.2 Field Activities

Field activities designed to gather the information necessary to make decisions during the RI process require consistent documentation and accurate record keeping. During site activities, standardized procedures will be used for documentation of field activities, data security, and quality assurance. These procedures are described in further detail in the following subsections.

16.2.1 Field Documentation

Complete and accurate record keeping is a critical component of the field investigation activities. When interpreting analytical results and identifying data trends, investigators realize that field notes are an important part of the review and validation process. To ensure that the field investigation is thoroughly documented, several different information records, each with its own specific reporting requirements, will be maintained, including:

- Field logs; and
- COC forms.

A description of each of these types of field documentation is provided below.

Field Logs

The personnel performing the field activities will keep field logs that detail all observations and measurements made during the RI. Data will be recorded directly into site-dedicated, bound notebooks, with each entry dated and signed. To ensure at any future date that notebook pages are not missing, each page will be sequentially numbered. Erroneous entries will be corrected by crossing out the original entry, initialing it, and then documenting the proper information. In addition, certain media sampling locations will be surveyed to accurately record their locations. The survey crew will use their own field logs and will supply the sampling location coordinates to the Database Administrator.

COC Forms

COC forms are used as a means of documenting and tracking sample possession from time of collection to the time of disposal. A COC form will accompany each field sample collected, and one copy of the form will be filed in the field office. All field personnel will be briefed on the proper use of the COC procedure. COC procedures and a sample form are included in FSP.

Instrument Calibration Records

As part of data quality assurance procedures, field monitoring and detection equipment will be routinely calibrated. Instrument calibration ensures that equipment used is of the proper type, range, accuracy, and precision to provide data compatible with the specified requirements and desired results. Calibration procedures for the various types of field instrumentation are described in Section 13.1. In order to demonstrate that established calibration procedures have been followed, calibration records will be prepared and maintained to include, as appropriate, the following:

- calibration date and time;
- type and identification number of equipment;
- calibration frequency and acceptable tolerances;
- identification of individual(s) performing calibration;
- reference standards used;
- calibration data; and
- information on calibration success or failure.

The calibration record will serve as a written account of monitoring or detection equipment QA. All erratic behavior or failures of field equipment will be subsequently recorded in the calibration log.

16.2.2 Data Security

Measures will be taken during the field investigation to ensure that samples and records are not lost, damaged, or altered. When not in use, all field notebooks will be stored at the field office or locked in the field vehicle. Access to these files will be limited to the field personnel who utilize them.

16.3 Sample Management and Tracking

A record of all field documentation will be maintained to ensure the validity of data used in the site analysis. To effectively execute such documentation, specific sample tracking and data management procedures will be used throughout the sampling program.

Sample tracking will begin with the completion of COC forms as summarized in Section 9.2.3. The completed COC forms associated with samples collected will be faxed to the QAC. Copies of all completed COC forms will be maintained in the field office. The laboratory shall verify receipt of the samples electronically (via email) on the following day.

When analytical data are received from the laboratory, the QAC will review the incoming analytical data packages against the information on the COCs to confirm that the correct analyses were performed for each sample and that results for all samples submitted for analysis were received. Any discrepancies noted will be promptly followed-up by the QAC.

16.4 Data Management System

In addition to the sample tracking system, a data management system will be implemented. The central focus of the data management system will be the development of a personal computer-based project database. The project database, to be maintained by the Database Administrator, will combine pertinent geographical, field, and analytical data. Information that will be used to populate the database will be derived from three primary sources: surveying of sampling locations, field observations, and analytical results. Each of these sources is discussed in the following sections.

16.4.1 Computer Hardware

The database will be constructed on Pentium®-based personal computer work stations connected through a Novell network server. The Novell network will provide access to various hardware peripherals, such as laser printers, backup storage devices, image scanners, modems, etc. Computer hardware will be upgraded to industrial and corporate standards, as necessary, in the future.

16.4.2 Computer Software

The database will be written in Microsoft Access, running in a Windows operating system. Custom applets, such as diskette importing programs, will be written in either Microsoft VBA or Microsoft Visual Basic. Geographic Information System (GIS) applications will be developed in ESRI ArcGIS, with additional customization performed with Visual Basic. Tables and other database reports will be generated through Access in conjunction with Microsoft Excel, Microsoft Word, and/or Seagate Crystal Reports. These software products will be upgraded to current industrial standards, as necessary.

16.4.3 Survey Information

In general, each location sampled as part of the RI will be surveyed to ensure accurate documentation of sample locations for mapping and GIS purposes (if appropriate), to facilitate the re-sampling of select sample locations during future monitoring programs, if needed, and for any potential remediation activities. The surveying activities that will occur in the field will consist of the collection of information that will be used to compute a northing and easting in state plane coordinates for each sample location and the collection of information to compute elevations relative to the National Geodetic Vertical Datum of 1988 for select sample locations, as appropriate. All field books associated with the surveying activities will be stored as a record of the project activities.

16.4.4 Field Observations

An important part of the information that will ultimately reside in the data management system for use during the project will originate in the observations that are recorded in the field.

Following each sampling event, a status memorandum may be prepared by the field personnel who performed the sampling activities. The purpose of the status memo is to present a summary and a record of the sampling event. Topics to be discussed include the locations sampled, the sampling methodologies used, QA/QC procedures, blind duplicate and MS/MSD sample identification numbers, equipment decontamination procedures, personnel involved in the activity, and any other noteworthy events that occurred.

Tables are typically attached to the memorandum and are used to summarize measurements that were recorded in the field books. It is anticipated that these tables will be developed using a personal computer spreadsheet program to reduce possible transcription error and to facilitate the transfer of information to the data management system. For example, for sediment samples, the table would present the sampling date and time, water depth, sediment depth, depth of sediment recovered in a given core, the depth increment submitted for analysis, and a description of the lithology.

Status memos are valuable tools to keep project personnel informed on the details of the field activities and are also invaluable during the development of the final report. Each status memo will be reviewed for accuracy and completeness by the respective sampling activity manager. Following the approval and finalization of each memo, the status memo will be used to transfer field observations into the data management system.

All pertinent field data will be manually entered into the appropriate database tables from the COC forms and field notebooks.

16.4.5 Analytical Results

Analytical results will be provided by the laboratory in both a digital and a hard copy format. The data packages will be examined to ensure that the correct analyses were performed for each sample submitted and that all of the analyses requested on the COC form were performed. If discrepancies are noted, the QAC will be notified and will promptly follow up with the laboratory to resolve any issues.

Each data package will be validated in accordance with the procedures presented in Section 20. Any data that does not meet the specified standards will be flagged pending resolution of the issue. The flag will not be removed from the data until the issue associated with the sample results is resolved. Although flags may remain for certain data, the use of that data may not necessarily be restricted.

Following completion of the data validation, the digital files will be used to populate the appropriate database tables. An example of the format of electronic data deliverable (EDD) format is included in Table 5. This format specifies one data record for each constituent for each sample analyzed. Specific fields include:

- Sample identification number;
- Date sampled;
- Date analyzed;
- Parameter name;
- Analytical result;
- Units;
- Detection limit; and
- Qualifier(s).

The individual EDDs, supplied by the laboratory in either an ASCII comma separated value (CSV) format or in a Microsoft Excel worksheet, will be loaded into the appropriate database table via a custom-designed user interface Visual Basic program. Any analytical data that cannot be provided by the laboratory in electronic format will be entered manually. After entry into the database, the EDD data will be compared to the field information previously entered into the database to confirm that all requested analytical data have been received.

16.4.6 Data Analysis and Reporting

The database management system will have several functions to facilitate the review and analysis of the RI data. Data entry screens will be developed to assist in the keypunching of field observations. Routines will also be developed to permit the user to scan analytical data from a given site for a given media. Several output functions that have been developed by BBL will be appropriately modified for use in the data management system.

A valuable function of the data management system will be the generation of tables of analytical results from the project databases. The capability of the data management system to directly produce tables reduces the redundant manual entry of analytical results during report preparation and precludes transcription errors that may occur otherwise. This data management system function creates a digital comma-delimited ASCII file of analytical results and qualifiers for a given media. The ASCII file is then processed through a spreadsheet, which transforms the comma-delimited file into a table of rows and columns. Tables of analytical data will be produced as part of data interpretation tasks, the reporting of data, and the generation of the RI Report.

Another function of the data management system will be to create digital files of analytical results and qualifiers suitable for transfer to mapping/presentation software. A function has been created by BBL that creates a digital file consisting of sample location number, state plane coordinates, sampling date, and detected constituents and associated concentrations and analytical qualifiers. The file is then transferred to an AutoCAD work station, where another program has been developed to plot a location's analytical data in a "box" format at the sample location (represented by the state plane coordinates). This routine greatly reduces the redundant keypunching of analytical results and facilitates the efficient production of interpretative and presentation graphics.

The data management system also has the capability of producing a digital file of select parameters that exists in one or more of the databases. This type of custom function is accomplished on an interactive basis and is best used for transferring select information into a number of analysis tools, such as statistical or graphing programs.

16.5 Document Control and Inventory

BBL maintains project files at its Syracuse, New York office. Each client project is assigned a file/job number. Each file is then broken down into the following subfiles:

1. Agreements/Proposals (filed chronologically)
2. Change Orders/Purchase Orders (filed chronologically)
3. Invoices (filed chronologically)
4. Project Management (filed by topic)
5. Correspondence (filed chronologically)
6. Notes and Data (filed by topic)
7. Public Relations Information (filed by topic)
8. Regulatory Documents (filed chronologically)
9. Marketing Documents (filed chronologically)
10. Final Reports/Presentations (filed chronologically)
11. Draft Reports/Presentations (filed chronologically)
12. Documents Prepared by Others (filed chronologically)

Originals, when possible, are placed in the files. These are the central files and will serve as the site-specific files for the RI investigations.

17. Assessment and Response Actions

17.1 General

Performance and systems audits will be completed in the field and laboratory during the RI as described below.

17.2 Field Audits

The following field performance and systems audits will be completed during this project.

The appropriate Task Manager will monitor field performance. Field performance audit summaries will contain an evaluation of field activities to verify that activities are performed according to established protocols. The BBL QAC will review field reports and communicate concerns to the BBL Project Manager and/or Task Managers, as appropriate. In addition, the BBL QAC will review the rinse and trip blank data to identify potential deficiencies in field sampling and cleaning procedures. In addition, systems audits comparing scheduled QA/QC activities from this document with actual QA/QC activities completed will be performed. The appropriate Task Manager and QAC will periodically confirm that work is being performed consistent with this QAPP, the RI Work Plan, and FSP.

17.3 Laboratory Audits

The laboratory will perform internal audits consistent with NYSDEC ASP 2000 Revision, Exhibit E.

Internal laboratory audits are conducted by the laboratory QAC. As part of the audit, the overall performance of the laboratory staff is evaluated and compared to the performance criteria outlined in the laboratory quality assurance manual and SOPs. The results of the audits are summarized and issued to each department supervisor, the Laboratory Manager, and the Laboratory Director. A systems audit of each laboratory is also performed by the QAC to determine if the procedures implemented by each laboratory are in compliance with the quality assurance manual and SOPs.

In addition to the laboratory's internal audits, as participants in state and federal certification programs, the laboratory is audited by representatives of the regulatory agency issuing certification. Audits are usually conducted on an annual basis and focus on laboratory conformance to the specific program protocols for which the laboratory is seeking certification. The auditor reviews sample handling and tracking documentation, analytical methodologies, analytical supportive documentation, and final reports. The audit findings are formally documented and submitted to the laboratory for corrective action, if necessary.

BBL reserves the right to conduct an on-site audit of the laboratory prior to the start of analyses for the project. Additional audits may be performed during the course of the project, as deemed necessary.

17.4 Corrective Action

Corrective actions are required when field or analytical data are not within the objectives specified in this QAPP the FSP, or the RI Work Plan. Corrective actions include procedures to promptly investigate, document, evaluate, and correct data collection and/or analytical procedures. Field and laboratory corrective action procedures for the actions are described below.

17.4.1 Field Procedures

When conducting the action field work, if a condition is noted by the field crew that would have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause, and corrective action implemented by the Field Manager or a designee, will be documented on a Corrective Action Form and reported to the appropriate BBL Task Manager, QAC, and Project Manager.

Examples of situations that would require corrective actions are provided below:

- Protocols as defined by the QAPP, RI Work Plan, and FSP have not been followed;
- Equipment is not in proper working order or is not properly calibrated;
- QC requirements have not been met; or
- Issues resulting from performance or systems audits have not been resolved.

Project personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities.

17.4.2 Laboratory Procedures

In the laboratory, when a condition is noted to have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause, and corrective action taken will be documented and reported to the appropriate Project Manager and QAC.

Corrective action may be initiated, at a minimum, under the following conditions:

- Specific laboratory analytical protocols have not been followed;
- Protocols as defined by this QAPP have not been followed;
- Predetermined data acceptance standards are not obtained;
- Equipment is not in proper working order or calibrated;
- Sample and test results are not completely traceable;
- QC requirements have not been met; or
- Issues resulting from performance or systems audits have not been resolved.

Laboratory personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities. Corrective action is initiated at a point were the problem has been identified. At whatever level this occurs (analyst, supervisor, data review, or quality control), it is brought to the attention of the laboratory QAC and, ultimately, the Laboratory Director. Final approval of any action deemed necessary is subject to the approval of the Laboratory Director.

Any corrective action deemed necessary based on system or performance audits or the results of data review will be implemented. The corrective action may include sample re-extraction, re-preparation, re-analysis, cleanup, dilutions, matrix modifications, or other activities.

18. Reports to Management

18.1 Internal Reporting

The analytical laboratory will submit analytical reports to BBL for review. If required, BBL will, in turn, submit the reports to the data validator for review. Supporting data (i.e., historic data, related field or laboratory data) will also be reviewed to evaluate data quality, as appropriate. The BBL Quality Assurance Manager will incorporate results of the data validation reports (if required) and assessments of data usability into a summary report (if required) that will be submitted to the BBL Project Manager and appropriate Task Managers. If required, this report will be filed in the project file at BBL's office and will include the following:

1. Assessment of data accuracy, precision, and completeness for both field and laboratory data;
2. Results of the performance and systems audits;
3. Significant QA/QC problems, solutions, corrections, and potential consequences; and
4. Analytical data validation report.

18.2 RI Reporting

Upon sample transport to the laboratory, a copy of the chain-of-custody will be forwarded to BBL’s Project Manager. Upon receipt of the ASP - Category B Data Package from the laboratory, the BBL Quality Assurance Manager will determine if the data package has met the required data quality objectives. The analytical data package will be submitted to the BBL Project Manager and the analytical data will be incorporated into the RI Report in a tabulated format.

19. Data Reduction and Review

19.1 General

After field and laboratory data are obtained, the data will be subject to the following:

1. Reduction, or manipulation mathematically, or otherwise into meaningful and useful forms;
2. Review;
3. Organization, interpretation, and reporting; and
4. Data validation.

19.2 Field Data Reduction and Review

19.2.1 Field Data Reduction

Information collected in the field through visual observation, manual measurement, and/or field instrumentation will be recorded in field notebooks or data sheets, and/or on forms. Such data will be reviewed by the appropriate Task Manager for adherence to the RI Work Plan, FSP, and this QAPP and for consistency. Concerns identified as a result of this review will be discussed with the field personnel, corrected if possible, and, as necessary, incorporated into the data evaluation process.

19.2.2 Field Data Review

Field data calculations, transfers, and interpretations will be conducted by the field personnel and reviewed for accuracy by the appropriate Task Manager and the QAC. Logs and documents will be checked for:

1. General completeness;
2. Readability;
3. Usage of appropriate procedures;
4. Appropriate instrument calibration and maintenance;
5. Reasonableness in comparison to present and past data collected;
6. Correct sample locations; and
7. Correct calculations and interpretations.

19.3 Laboratory Data Reduction and Review

19.3.1 Laboratory Data Reduction

The calculations used for data reduction will be specified in each of the analytical methods referenced previously. Whenever possible, analytical data will be transferred directly from the instrument to a computerized data system. Raw data will be entered into permanently bound laboratory notebooks. The data entered are sufficient to document all factors used to arrive at the reported value.

Concentration calculations for chromatographic analyses will be based on response factors. Quantitation will be performed using either internal or external standards.

Inorganic analyses will be based on regression analysis. Regression analysis is used to fit a curve through the calibration standard data. The sample concentrations will be calculated using the resulting regression equations. Non-aqueous values will be reported on a dry-weight basis. Unless otherwise specified, all values will be reported uncorrected for blank contamination.

19.3.2 Laboratory Data Review

Data will be subject to multi-level review by the laboratory. The group leader will review all data reports prior to release for final data report generation. The QAC will review the final data reports, and the Laboratory Director will review a cross-section of the final data reports prior to shipment to BBL.

If discrepancies or deficiencies exist in the analytical results, then corrective action will be taken, as discussed in Section 17. Deficiencies discovered as a result of internal data review, as well as the corrective actions to be used to rectify the situation, will be documented on a Corrective Action Form. This form will be submitted to the BBL Project Manager.

19.4 Data Validation and Verification

All data generated for health and safety and engineering design/control purposes will be subjected to the data validation and verification procedures outlined in Section 20. Data generated for disposal purposes will not be reviewed.

20. Data Validation and Verification

Data validation entails a review of the quality control data and the raw data to verify that the laboratory was operating within required limits, the analytical results were correctly transcribed from the instrument read outs, and which, if any, environmental samples were related to any out-of-control quality control samples. The objective of data validation is to identify any questionable or invalid laboratory measurements.

BBL will validate all data generated producing a NYSDEC data usability summary report (DUSR) for each individual SDG using the most recent versions of the USEPA's Function Guidelines (USEPA, 1999; 2002) and USEPA Region II SOPs for data validation available at the time of project initiation, where appropriate. These procedures and criteria may be modified as necessary to address project-specific and method-specific criteria, control limits, and procedures. Data validation will consist of data screening, checking, reviewing, editing, and interpretation to document analytical data quality and to determine whether the quality is sufficient to meet the DQOs.

The data validator will verify that reduction of laboratory measurements and laboratory reporting of analytical parameters is in accordance with the procedures specified for each analytical method and/or as specified in this QAPP. Any deviations from the analytical method or any special reporting requirements apart from that specified in this QAPP will be detailed on COC forms.

Upon receipt of laboratory data, the following procedures will be executed by the data validator:

- Evaluate completeness of data package;
- Verify that field COC forms were completed and that samples were handled properly;
- Verify that holding times were met for each parameter. Holding time exceedences, should they occur, will be documented. Data for all samples exceeding holding time requirements will be flagged as either estimated or rejected. The decision as to which qualifier is more appropriate will be made on a case-by-case basis;
- Verify that parameters were analyzed according to the methods specified;
- Review QA/QC data (i.e., make sure duplicates, blanks, and spikes were analyzed on the required number of samples, as specified in the method; verify that duplicate and MS recoveries are acceptable);
- Investigate anomalies identified during review. When anomalies are identified, they will be discussed with the Project Manager and/or Laboratory Manager, as appropriate; and
- If data appears suspect, investigate the specific data of concern. Calculations will be traced back to raw data; if calculations do not agree, the cause will be determined and corrected.

Deficiencies discovered as a result of the data review, as well as the corrective actions implemented in response, will be documented and submitted in the form of a written report addressing the following topics as applicable to each method:

- Assessment of the data package;
- Description of any protocol deviations;
- Failures to reconcile reported and/or raw data;
- Assessment of any compromised data;
- Overall appraisal of the analytical data; and
- Table of site name, sample quantities, matrix, and fractions analyzed.

It should be noted that qualified results do not necessarily invalidate data. The goal to produce the best possible data does not necessarily mean producing data without quality control qualifiers. Qualified data can provide useful information.

Resolution of any issues regarding laboratory performance or deliverables will be handled between the laboratory and the data validator. Suggestions for reanalysis may be made by the BBL QAC at this point.

Data validation reports will be kept in the project file at the BBL office in Syracuse, New York.

21. Reconciliation with User Requirements

The data results will be examined to determine the performance that was achieved for each data usability criteria. The performance will then be compared with the project objectives and DQOs. Deviations from objectives will be noted. Additional action may be warranted when performance does not meet performance objectives for critical data. Options for corrective action relating to incomplete information, questionable results or inconsistent data, may include any or all of the following:

- Retrieval of missing information;
- Request for additional explanation or clarification;
- Reanalysis of sample from extract (when appropriate); and
- Recalculation or reinterpretation of results by the laboratory.

These actions may improve the data quality, reduce uncertainty, and may eliminate the need to qualify or reject data.

If these actions do not improve the data quality to an acceptable level, the following additional actions may be taken:

- Extrapolation of missing data from existing data points;
- Use of historical data; and
- Evaluation of the critical/non-critical nature of the sample.

If the data gap cannot be resolved by these actions, an evaluation of the data bias and potential for false negatives and positives can be performed. If the resultant uncertainty level is unacceptable, the following action must be taken:

- Additional sample collection and analysis.

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Tables

TABLE 1
ENVIRONMENTAL AND QUALITY CONTROL ANALYSES

QUALITY ASSURANCE PROJECT PLAN
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Environmental Sample Matrix/Laboratory	Estimated Environmental Sample Quantity	Field QC Analyses					Laboratory QC Analyses[1,2]						Estimated Overall Total
		Trip Blank		Field Duplicate		Est. Matrix	MS		MSD		Lab Duplicate		
		Freq	No.	Freq	No.		Freq	No.	Freq	No.	Freq	No.	
Soil													
BTEX Method 8260	8	1/cooler	1	1/20	1	9	1/20	1	1/20	1	--	--	11
PAHs Method 8270	8	--	--	1/20	1	9	1/20	1	1/20	1	--	--	11
Total Cyanide Method 9010	46	--	--	1/20	3	49	1/20	3		--	1/20	3	55
TCL VOCs +MTBE Method 8260	38	--	--	1/20	2	40	1/20	2	1/20	2	--	--	44
TCL SVOCs Method 8270	38	--	--	1/20	2	40	1/20	2	1/20	2	--	--	44
RCRA Metals Method 6010/7470/7471	38	--	--	1/20	2	40	1/20	2	--	--	1/20	2	44
PCBs Method 8082	10	--	--	1/20	1	11	1/20	1	1/20	1	--	--	13
TCLP Benzene	3	--	--	1/20	1	4	--	--	--	--	--	--	4
Reactivity	3	--	--	1/20	1	4	--	--	--	--	--	--	4
Total Sulfur	3	--	--	1/20	1	4	--	--	--	--	--	--	4
Flashpoint	3	--	--	1/20	1	4	--	--	--	--	--	--	4
Groundwater													
VOCs (+MTBE) Method 8260	11	1/cooler	4	1/20	1	16	1/20	1	1/20	1	--	--	18
SVOCs Method 8270	11	--	--	1/20	1	12	1/20	1	--	--	1/20	1	14
RCRA Metals Method 6010/7470/7471	11	--	--	1/20	1	12	1/20	1	--	--	1/20	1	14
Total Cyanide Method 9010	11	--	--	1/20	1	12	1/20	1	--	--	1/20	1	14
PCBs Method 8082	11	--	--	1/20	1	12	1/20	1	1/20	1	--	--	14

TABLE 1
ENVIRONMENTAL AND QUALITY CONTROL ANALYSES

QUALITY ASSURANCE PROJECT PLAN
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Notes:

1 The number of laboratory quality control analyses is based on the frequencies given for the number of environmental samples estimated, not including field quality control analyses (**i.e.,** trip blanks).

2 Laboratory quality control analyses are listed only for those parameters that must be performed on site samples. The laboratory is required to analyze quality control samples for the remaining parameters at the frequency listed in the associated analytical method.

BTEX = Benzene, toluene, ethylbenzene, and total xylenes.
PAHs = Polycyclic aromatic hydrocarbons.
TCL VOCs + MTBE = Target compound list volatile organic compounds plus methyl-tert butyl ether.
SVOCs = Semivolatile organic compounds.
RCRA = Resource Conservation and Recovery Act.
PCBs = Polychlorinated biphenyls.
TCLP = Toxicity Characteristic Leaching Procedure.
MS = Matrix spike.
MSD = Matrix spike duplicate.

TABLE 2
ANALYTICAL QUALITY CONTROL LIMITS [1]

QUALITY ASSURANCE PROJECT PLAN
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Parameter	Accuracy - % Recovery			Precision - RPD		
	Surrogate	MS/MSD	LCS	MS/MSD	Lab Duplicate	Field Duplicate
Soil						
Volatile Organics	60-140	60-140	70-140	25	--	50
Semivolatile Organics	20-140	20-140	40-120	40	--	50
PCBs	30-150	30-140	50-140	40	--	50
Metals	--	80-120	80-120	--	20	50
Total Organic Carbon	--	70-130	70-130	--	30	50
Soil (leachates)						
Volatile Organics	75-115	60-145	70-140	20	--	50
Semivolatile Organics	20-140	20-130	40-120	40	--	50
Pesticides	30-150	40-130	50-140	20	--	50
Herbicides	30-120	30-120	30-120	20	--	50
Metals	--	80-120	80-120	--	30	50
Reactivity	--	70-130	70-130	--	30	50
Corrosivity	--	--	70-130	--	30	50
Groundwater						
Volatile Organics	75-115	60-145	70-140	20	--	30
Semivolatile Organics	20-140	20-130	40-120	40	--	30
PCBs	30-150	40-130	50-140	20	--	30
Metals	--	80-120	80-120	--	30	30

Note:
1 The listed QC limits are based on SW-846 guidance and are advisory. The actual limits are determined based on laboratory performance. Frequent failure to meet the QC limits; however, warrant investigation of the laboratory.

TABLE 3
PARAMETERS, METHODS, AND TARGET REPORTING LIMITS

QUALITY ASSURANCE PROJECT PLAN
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Analyte	Water (ug/L)			Soil/Sediment[2] (ug/kg)			Leachate
	NYS GW STD/G.V.[3]	Laboratory MDL	Laboratory RL	TAGM G.V.[4]	Laboratory MDL	Laboratory RL	Laboratory RL (mg/L)
Volatile Organic Compounds 8260 [1]							
Dichlorodifluoromethane	5	0.2	5	NA	0.4	5	--
Chloromethane	5	0.3	5	NA	0.3	5	--
Bromomethane	5	0.3	5	NA	0.3	5	--
Vinyl chloride	2	0.3	5	200	0.4	5	--
Chloroethane	5	0.3	5	1,900	0.4	5	--
Trichlorofluoromethane	5	0.2	5	NA	0.4	5	--
Methylene chloride	5	0.3	3	100	0.3	3	--
1,1,2-Trichloro-1,2,2-trifluoroethane	5	0.2	5	6,000	0.3	5	--
Acetone	50	1	5	200	1	5	--
Carbon disulfide	60	0.4	5	2,700	0.2	5	--
Methyl acetate	NA	0.3	5	NA	0.3	5	--
1,1-Dichloroethene	5	0.3	2	400	0.3	2	--
1,1-Dichloroethane	5	0.2	5	200	0.1	5	--
trans-1,2-Dichloroethene	5	0.2	5	300	0.3	5	--
Methyl tert-butyl ether	10	0.2	5	NA	0.4	5	--
Chloroform	7	0.2	5	300	0.2	5	--
1,2-Dichloroethane	0.6	0.20	2	100	0.2	2	--
cis-1,2-Dichloroethene	5	0.1	5	NA	0.1	5	--
2-Butanone	50	1	5	300	1.5	5	--
1,1,1-Trichloroethane	5	0.2	1	800	0.2	5	--
Cyclohexane	NA	0.2	5	NA	0.4	5	--
Carbon tetrachloride	5	0.2	5	600	0.2	2	--
Bromodichloromethane	50	0.2	5	NA	0.3	1	--
1,2-Dichloropropane	1	0.3	1	NA	0.3	1	--
cis-1,3-Dichloropropene	0.4	0.2	5	NA	0.3	5	--
Trichloroethene	5	0.3	1	700	0.2	1	--
Methylcyclohexane	NA	0.2	5	NA	0.2	5	--
Dibromochloromethane	50	0.2	5	NA	0.2	5	--
1,2-Dibromoethane	0.0006	0.2	5	NA	0.2	5	--
1,1,2-Trichloroethane	1	0.3	3	NA	0.3	3	--
Benzene	1	0.2	1	60	0.2	1	--
trans-1,3-Dichloropropene	0.4	0.3	5	NA	0.2	5	--
Bromoform	50	0.4	4	NA	0.2	4	--
Isopropylbenzene	5	0.2	5	NA	0.2	5	--
4-Methyl-2-pentanone	NA	0.9	5	1,000	1.2	5	--
2-Hexanone	50	1	5	NA	0.8	5	--
Tetrachloroethene	5	0.2	1	1,400	0.2	1	--
Toluene	5	0.1	5	1,500	0.2	5	--
1,1,2,2-Tetrachloroethane	5	0.2	1	600	0.3	1	--
Chlorobenzene	5	0.1	5	1,700	0.2	5	--
Ethylbenzene	5	0.3	4	5,500	0.1	4	--
Styrene	5	0.2	5	NA	0.2	5	--
Xylenes (total)	5	0.4	5	1,200	0.3	5	--
1,3-Dichlorobenzene	3	0.1	5	1,600	0.3	5	--
1,4-Dichlorobenzene	3	0.3	5	8,500	0.3	5	--
1,2-Dichlorobenzene	3	0.2	5	7,900	0.1	5	--
1,2-Dibromo-3-chloropropane	0.04	0.5	5	NA	0.4	5	--
1,2,4-Trichlorobenzene	5	0.3	5	3,400	0.2	5	--
Methyl t-butyl ether (MTBE)	10	0.2	5	NA	0.4	5	--

TABLE 3
PARAMETERS, METHODS, AND TARGET REPORTING LIMITS

QUALITY ASSURANCE PROJECT PLAN
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Analyte	Water (ug/L)			Soil/Sediment[2] (ug/kg)			Leachate
	NYS GW STD./G.V.[3]	Laboratory MDL	Laboratory RL	TAGM G.V.[4]	Laboratory MDL	Laboratory RL	Laboratory RL (mg/L)
Semivolatile Organic Compounds 8270 [2]							
Benzaldehyde	NA	0.9	10	NA	10.5	330	--
Phenol	1	0.5	10	330	68	330	--
bis(2-Chloroisopropyl)ether	NA	0.5	10	NA	33.3	330	--
2-Chlorophenol	NA	1.2	10	800	75.1	330	--
2-Methylphenol	NA	0.7	10	330	66	330	--
2,2'-oxybis(1-Chloropropane)	5	0.5	10	NA	33.3	330	--
Acetophenone	NA	0.8	10	NA	34.1	330	--
4-Methylphenol	NA	1.1	10	900	67	330	--
N-Nitrosos-di-n-propylamine	50	0.6	1	NA	18.4	33	--
Hexachloroethane	5	0.7	1	NA	10.2	33	--
Nitrobenzene	0.4	0.6	1	330	7.8	33	--
Isophorone	50	0.4	10	4,400	33.1	330	--
2-Nitrophenol	NA	1.5	10	330	73.1	330	--
2,4-Dimethylphenol	50	1	10	NA	68.2	330	--
bis(2-Chloroethoxy)methane	5	0.6	10	NA	35.5	330	--
2,4-Dichlorophenol	5	1.2	10	400	69.1	330	--
Naphthalene	10	0.04	10	13,000	3.4	330	--
4-Chloroaniline	5	0.6	10	330	48.4	330	--
Hexachlorobutadiene	0.5	1.3	2	NA	30.1	67	--
Caprolactam	NA	0.03	10	NA	76.9	330	--
4-Chloro-3-methylphenol	NA	1.1	10	330	64.3	330	--
2-Methylnaphthalene	NA	0.4	10	36,400	36.8	330	--
Hexachlorocyclopentadiene	5	0.4	10	NA	55.5	330	--
2,4,6-Trichlorophenol	NA	0.7	10	NA	75.8	330	--
2,4,5-Trichlorophenol	NA	0.6	10	100	42.4	800	--
1,1'-Biphenyl	5	TBD	10	NA	TBD	330	--
2-Chloronaphthalene	10	0.4	10	NA	34.7	330	--
2-Nitroaniline	5	0.8	20	800	35.9	670	--
Dimethylphthalate	50	0.3	10	2,000	26.3	330	--
Acenaphthylene	NA	0.1	10	41,000	6.6	330	--
2,6-Dinitrotoluene	5	0.6	2	1,000	29.5	67	--
3-Nitroaniline	5	0.3	20	800	33.4	670	--
Acenaphthene	20	0.1	10	50,000	3.7	330	--
2,4-Dinitrophenol	10	1.6	40	800	95.4	1300	--
4-Nitrophenol	NA	0.6	40	800	90.6	1300	--
Dibenzofuran	NA	0.3	10	6,200	35.9	330	--
2,4-Dinitrotoluene	5	0.4	2	NA	26.9	67	--
Diethylphthalate	50	0.2	10	7,100	30.8	330	--
4-Chlorophenyl-phenylether	NA	0.3	10	NA	29.8	330	--
Fluorene	50	0.1	10	50,000	3.6	330	--
4-Nitroaniline	5	0.5	20	NA	34.4	670	--
4,6-Dinitro-2-methylphenol	NA	0.2	40	NA	130	1300	--
N-Nitrosodiphenylamine	50	0.2	10	NA	23	330	--
4-Bromophenyl-phenylether	NA	0.4	10	NA	34.6	330	--
Hexachlorobenzene	0.04	0.3	1	410	23.8	33	--
Atrazine	7.5	0.6	10	NA	48.2	330	--
Pentachlorophenol	1	2.5	40	1,000	53.3	1300	--
Phenanthrene	50	0.1	10	50,000	3	330	--
Anthracene	50	0.1	10	50,000	4.9	330	--
Carbazole	NA	0.03	10	NA	4.3	330	--
Di-n-butyl phthalate	50	0.4	10	8,100	44	330	--
Fluoranthene	50	0.1	10	50,000	3	330	--

TABLE 3
PARAMETERS, METHODS, AND TARGET REPORTING **LIMITS**

QUALITY ASSURANCE PROJECT PLAN
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Analyte	Water (ug/L) NYS GW STD./G.V.[3]	Water (ug/L) Laboratory MDL	Water (ug/L) Laboratory RL	Soil/Sediment[2] (ug/kg) TAGM G.V.[4]	Soil/Sediment[2] (ug/kg) Laboratory MDL	Soil/Sediment[2] (ug/kg) Laboratory RL	Leachate Laboratory RL (mg/L)
Semivolatile Organic Compounds 8270 (cont'd)							
Pyrene	50	0.1	10	50,000	4.4	330	--
Butylbenzylphthalate	50	0.6	10	50,000	37.7	330	--
3,3'-Dichlorobenzidine	5	2.4	20	NA	271.2	670	--
Benzo(a)anthracene	0.002	0.1	1	330	6.1	33	--
Chrysene	0.002	0.1	10	400	4	330	--
bis(2-Ethylhexyl)phthalate	5	0.8	10	50,000	55.4	330	--
Di-n-octyl phthalate	50		10	50,000	36.5	330	--
Benzo(b)fluoranthene	0.002	0.1	1	1,100	5.8	33	--
Benzo(k)fluoranthene	0.002	0.1	1	1,100	4.8	33	--
Benzo(a)pyrene	ND	0.1	1	330	4.4	33	--
Indeno(1,2,3-cd)pyrene	0.002	0.1	1	3,200	3.7	33	--
Dibenz(a,h)anthracene	NA	0.1	1	330	4.5	33	--
Benzo(g,h,i)perylene	NA	0.1	10	50,000	5.3	330	--
PCBs **8082** [1]							
Aroclor 1016	0.09	0.3	0.050	1,000	30	67	--
Aroclor 1221	0.09	0.4	0.050	1,000	33	67	--
Aroclor 1232	0.09	0.4	0.050	1,000	33	67	--
Aroclor 1242	0.09	0.3	0.050	1,000	21	67	--
Aroclor 1248	0.09	0.4	0.050	1,000	20	67	--
\roclor 1254	0.09	0.3	0.050	1,000	35	67	--
roclor 1260	0.09	0.4	0.050	1,000	28	67	--
Inorganics **6010** [1]							
Arsenic	25	4.7	15	7,500	0.9	3	--
Barium	1,000	1.5	200	300,000	0.3	40	--
Cadmium	5	0.6	5	1,000	0.1	1	--
Chromium	50	1.9	10	10,000	0.4	2	--
Lead	25	2.7	10	SB	0.5	2	--
Selenium	10	4.9	35	2,000	1	7	--
Silver	50	2.5	10	SB	0.5	2	--
Inorganics 7470/7471 [1]							
Mercury	0.7	0.1	0.2	100	0.02	0.1	--
Inorganics 9010 [1]							
Cyanide	200	0.0023	0.01	NA	0.02	0.5	--
TCLP-Volatile-**131118260** [1]							
benzene	--	--	--	500	--	--	0.50
Other							
Reactive Cyanide (chap. 7.3 [1])	--	--	--	250,000	--	--	--
Reactive Sulfide (chap. 7.3 [1])	--	--	--	500,000	--	--	--
Ignitability (1030 [1])	--	--	--	--	--	--	--
Sulfur (ASTM **D3176**)	--	--	--	--	--	--	--

Notes:
1 **USEPA.** Office of Solid Waste and Emergency Response. Test Methods for Evaluating Solid Waste SW-846 3rd *ed.* Washington, D.C. 1996.
2 The target reporting limits are based on wet weight. The actual reporting limits will vary based on sample weight and moisture content.
3 Water guidance values (GV) are as presented in the NYSDEC, Division of Water, Technical and Operation Guidance Series (TOGS) **docume** document titled, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.**1)**, dated June 1998, last revised April 2000.
4 **Soil/Sediment** guidance values (GV) are as presented in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) titled, Determination of Soil Cleanup Objectives and Cleanup Levels, HWR-94-4046 (TAGM 4046) dated January 24, 1994.

TABLE 4
SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES

QUALITY ASSURANCE PROJECT PLAN
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Parameter	Method[1]	Bottle Type	Preservation	Holding Time[2]
Soil/Sediment				
Volatile Organic Compounds	8260	2 - 40 ml glass vials with Teflon®-lined lid	Cool to 4°C	48 hours to preservation 10 days to analysis
Semivolatile Organic Compounds	8270	1 - 8 oz glass jar with Teflon®-lined lid	Cool to 4°C	5 days to extraction
PCBs	8082			40 days to analysis
Metals (except mercury)	6010	1 - 4 oz wide mouth glass jar	Cool to 4°C	180 days to analysis
Mercury	7471			28 days to analysis
TCLP-Volatiles	1311/8260	1 - 4 oz glass jar with Teflon®-lined lid	Cool to 4°C	12 days to TCLP extraction 10 days to analysis
Total Cyanide	SW-846 Chapter 7.3	1 - 8oz wide mouth glass jar	Cool to 4°C	12 days to analysis
Reactive Cyanide	SW-846 Chapter 7.3	1 - 8oz wide mouth glass jar	Cool to 4°C	7 days to analysis
Reactive Sulfide	SW-846 Chapter 7.3			14 days to analysis
Flash Point (Ignitability)	1010			7 days to analysis
Total Solids	SM2540B	1 - 125 ml plastic jar	Cool to 4°C	7 days to analysis
Total Organic Carbon		1 - 125 ml glass jar	Cool to 4°C	28 days to analysis
Water				
Volatile Organic Compounds	8260	2 - 40 ml glass vials with Teflon®-lined lid	HCl to pH<2 Cool to 4°C	10 days to analysis
Semivolatile Organic Compounds	8270	2 - 1 liter amber glass bottle with Teflon®-lined lid	Cool to 4°C	5 days to extraction 40 days to analysis
PCBs	8082	2 - 1 liter amber glass bottle with Teflon®-lined lid	Cool to 4°C	5 days to extraction 40 days to analysis
Metals (except mercury)	6010	1 liter plastic bottle	HNO_3 to pH<2	180 days to analysis
Mercury	7470		Cool to 4°C	26 days to analysis
Total Cyanide	SW-846 Chapter 7.3	1 liter plastic bottle	Adjust to pH>12 with NaOH, cool to 4°C	12 days

Notes:

1 USEPA. Office of Solid Waste and Emergency Response. Test Methods for Evaluating Solid Waste. SW-846 3rd ed. Washington, D.C. 1996.
USEPA. Methods for Chemical Analysis of Water and Waste. EMSL-Cincinnati. 1983:
APHA. Standard Methods for the Examination of Water and Wastewater. Washington, DC. 1998.
ASTM International. 2003. Annual Book of ASTM Standards 2003 Section 4 Construction, Volume 04.08. West Conshohocken, PA. ASTM International
Department of the Army. 1986. Engineering Manual Laboratory Soils Testing. Washington, D.C. Department of the Army, Office of the Chief of Engineers

2 All holding times are measured from date of collection.

TABLE 5
ELECTRONIC DATA DELIVERABLE (EDD) FORMAT

QUALITY ASSURANCE PROJECT PLAN
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Field Name	Maximum Length	Data Type	Comments
FIELD SAMPLE ID	50	TEXT	From the chain of custody. Add "RE" or "DL" to differentiate reanalyses and dilutions.
SDG	50	TEXT	
LAB SAMPLE ID	50	TEXT	
MATRIX	10	TEXT	SOIL, WATER, SEDIMENT, etc.
SAMPLE TYPE	10	TEXT	FB, RB, TB, FD, FS for Field Blank, Rinse Blank, Trip Blank, Field Duplicate and Field Sample, respectively. DEFAULT TO FS
DATE COLLECTED	--	DATE/TIME	MM/DD/YY
TIME COLLECTED*	--	DATE/TIME	Military time
DEPTH START	--	NUMBER	
DEPTH END	--	NUMBER	
DEPTH UNITS	25	TEXT	FEET, INCHES, METERS, etc.
ANALYTICAL METHOD	50	TEXT	
CAS NUMBER	25	TEXT	
ANALYTE	100	TEXT	
RESULT VALUE	--	NUMBER	For non-detected results, enter Reporting Limit ("U" must be present in Lab Qualifier field).
LAB QUALIFIER	10	TEXT	"U" for non-detected, others as defined by laboratory.
REPORTING LIMIT	--	NUMBER	
RESULT UNIT	25	TEXT	
DILUTION FACTOR	--	NUMBER	
REPORTABLE RESULT	--	YES/NO	DEFAULT TO YES
FILTERED?	--	YES/NO	
DATE ANALYZED	--	DATE/TIME	MM/DD/YY
TIME ANALYZED'	--	DATE/TIME	Military time
DATE EXTRACTED'	--	DATE/TIME	MM/DD/YY
LABORATORY NAME'	50	TEXT	

Notes:
1 This definition is for an "Excel-type" spreadsheet. Fields flagged with an "*" are optional and may be left blank if not available electronically from the laboratory.
2 Depth-related fields may be left blank for samples and matrices for which they are not applicable.

Attachment A

Chain-of-Custody Form

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ___ of ___

Lab Work Order #:

Send Results to:	
Contact & Company Name:	Telephone:
Address:	Fax:
City State Zip	e-mail address:
Proj. Name/Location (City/State):	Project #:
Sampler's Printed Name:	Sampler's Signature:

Preservative							
Filtered (✓)							
# of Containers							
Container Information							

PARAMETER ANALYSIS & METHOD

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: _________
G. Other: _________
H. Other: _________

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz Glass
7. 4 oz Glass
8. 8 oz Glass
9. Other: ____________
10. **Other:** ____________

Matrix Key:
SO - Soil SE - Sediment NL - NAPL/Oil
W - Water SL - Sludge SW - Sample Wipe
T - Tissue A - Air Other: _____________

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix									REMARKS

Special Instructions/Comments:

☐ **Special QA/QC Instructions (✓) :**

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	Cooler Custody Seal (✓):	Printed Name:	Printed Name:	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm:	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp:________	Date/Time:	Date/Time:	Date/Time:	Date/Time:

Distribution: **WHITE – Lab returns with results** **YELLOW – Lab Copy** **PINK – Retained by BBL (for project files)**

Appendix D

Health and Safety Plan

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

Health & Safety Plan

Remedial Investigation

Washington Street Former MGP Site
Binghamton, New York

New York State Electric & Gas Corporation
Binghamton, New York

February 2005

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

Table of Contents

Tables

Attachments

Approvals and Acknowledgements

Approvals

I have read and approved this *Health and Safety Plan* (HASP) with respect to project hazards, regulatory requirements, and BBL procedures.

Project Name: NYSEG Binghamton (Washington St) Former MGP Site - Binghamton, New York

Project Number: 13055

________________________________ ________________________________

Project Manager/Date Health and Safety Officer/Date

____

Health and Safety Supervisor/Date

Acknowledgments

The final approved version of this HASP has been provided to the site supervisor. I acknowledge my responsibility to provide the site supervisor with the equipment, materials and qualified personnel to implement fully all safety requirements in this HASP. I will formally review this plan with the Health and Safety Staff every 6 months until project completion.

____

Project Manager/Date

I acknowledge receipt of this HASP from the project manager, and that it is my responsibility to explain its contents to all site personnel and cause these requirements to be fully implemented. Any change in conditions, scope of work, or other change that might affect worker safety requires me to notify the project manager and/or the health and safety officer.

____

Site Supervisor/Date

Health and Safety Plan Acknowledgement

I have read this Site-Specific Health and Safety Plan, or its contents have been presented to me, and I understand the contents and I agree to abide by its requirements.

Name (Print)	**Signature**	**Representing**	**Date**

1. Introduction

1.1 Objective

This *Health and Safety Plan* (HASP) supports various activities that are routinely performed by Blasland, Bouck & Lee, Inc. (BBL) at the New York State Electric and Gas Corporation (NYSEG) former MGP site, Washington Street, Binghamton, New York.

Field activities include the following tasks:

- Mobilization;
- Soil Boring;
- Sediment Probing;
- Installation of Groundwater Monitoring Wells;
- Monitoring Well Development;
- Field Sampling;
- Excavation of Test Pits;
- Surveying;
- Equipment Decontamination; and
- Demobilization.

The objective of this Health and Safety Plan (HASP) is to provide a mechanism for establishing safe working conditions at the site. The safety organization, procedures, and protective equipment have been established based on an analysis of potential physical, chemical, and biological hazards. Specific hazard control methodologies have been evaluated and selected to minimize the potential of injury, illness, or other hazardous incident.

1.2 Site and Facility Description

The site is located in the City of Binghamton, in Broome County, New York. The former MGP occupies approximately 1.4 acres of land within a city block bounded by Washington Street to the east, Water Street to the west, Susquehanna Street to the north, and Riverside Drive to the south. The site currently includes two, 2-story commercial buildings, associated parking lots, and a residential (apartment) building. One of the two commercial buildings is used by Rexel Electric Supply (formerly Wehle Electric) as an electrical supply warehouse and showroom. This building is scheduled to be demolished in mid-2005 in connection with planned brownfield redevelopment activities. The other commercial building is used by the American Automobile Association (AAA) as an office/travel center. This building is not included in redevelopment plans. The site is presently bounded to the north and south by various commercial buildings and parking lots, to the east by a highway access ramp, and to the west by an industrial property and the Chenango River. The layout of the site and the surrounding area is shown on the figure included on page 1-3.

Based on available NYSEG records, the Washington Street MGP was first operated by the Binghamton Gas Light Company in 1853. The plant initially provided gas by the coal carbonization process and later (around 1884) by the carbureted water gas process. Based on review of Sanborn maps, the site apparently contained the following major structures: two gas holders in the central portion of the site (Holder #1 and #2); various purifiers, super heaters, and several sheds north of the two gas holders; and offices in the western portion of the site. The suspected former locations of these structures (as depicted on a Sanborn map dated 1887) are shown on the figure included on page 1-3.

NYSEG records indicate that in 1887 the Binghamton Gas Light Company merged with Brush-Swan Electric Light Company to become Binghamton Gas and Electric Company. The Washington Street MGP ceased operations in 1888, and the land was sold when gas manufacture was consolidated with another plant in the City of Binghamton (the former Court Street MGP). Based on review of Sanborn mapping, all abovegrade MGP-related structures had been demolished by 1891, except for the former gas holder closest to Washington Street (Holder #1). As discussed below, Holder #1 was razed sometime between 1918 and 1950.

Sanborn mapping indicates that a lumber yard and carpentry shop occupied a portion of the site after MGP operations ceased. By the early 1900s, the majority of the former MGP had been redeveloped as the Larrabee-Deyo Motor Truck Company, which included a machine shop and assembly building in the western portion of the site (part of the existing Rexel Electric Supply building), a warehouse within former Holder #1, and an office/showroom in the eastern portion of the site. As indicated by Sanborn mapping, the warehouse/former Holder #1 was razed sometime between 1918 and 1950. By 1950, the site was occupied primarily by an automobile sales and service station and used car lot. A plumbing supply building had been constructed at the current location of the AAA building, and a gas station had been constructed south of the former MGP (at the location of the Henneken's building as shown on the figure included on page 1-3).

Land use in the vicinity of the former MGP has historically been commercial/industrial. A large tannery, which later became an Endicott Johnson shoe factory, was formerly located east of the MGP on property now occupied by a highway access ramp. In addition, a carriage manufacturing facility with a paint shop was formerly located north of the MGP on property now occupied by a ski and bike shop (Berger's Ski Shop).

1.3 Policy Statement

Blasland, Bouck & Lee, Inc.'s (BBL's) policy is to provide a safe and healthful work environment. No aspect of operations is of greater importance than injury and illness prevention. A fundamental principle of safety management is that all injuries, illnesses, and incidents are preventable. BBL will take every reasonable step to eliminate or control hazards to minimize the possibility of injury, illness, or incident.

This HASP prescribes the procedures that must be followed while performing site activities. Operational changes that could affect the health and safety of personnel, the community, or the environment will not be made without prior approval of the project manager (PM) and the health and safety manager. This document will be reviewed periodically to confirm that it is current and technically correct. Any changes in site conditions and/or the scope of work will require a review of and modification to this HASP. Such changes will be completed in the form of an addendum or a revision to the HASP.

The provisions of this HASP are mandatory for all BBL personnel and BBL subcontractors assigned to the project. Subcontractors may prepare their own site-specific HASPs that must meet the basic requirements of this HASP. All visitors to BBL work areas at the site must abide by the requirements of this HASP.

This HASP complies with applicable Occupational Safety and Health Administration (OSHA) regulations, United States Environmental Protection Agency (USEPA) *Standard Operating Safety Guidelines* (USEPA, 1992) and BBL's *Health and Safety Policies and Procedures Manual* (BBL, 2004). This HASP follows the guidelines established in the references listed in Section 11.

1.4 Definitions

The following definitions (listed alphabetically) are applicable to this HASP:

- *Contamination-Reduction Zone (CRZ)* —Area between the exclusion zone and support zone that provides a transition between contaminated and clean areas. Decontamination stations are located in this zone.

- *Emergency* - Any occurrence (including any failure of hazard control or monitoring equipment) or event (internal or external) that could endanger employees.

- *Exclusion Zone (EZ)* - Any portions of the site where hazardous substances are present, or are reasonably suspected to be present, and pose an exposure hazard to on-site personnel.

- *Incident* - All losses, including first-aid cases, injuries, illnesses, near misses, spills/leaks, equipment and property damage, motor vehicle accidents, regulatory violations, fires, and business interruptions.

- *Near Miss* - An incident in which no injury, illness, motor vehicle accident, equipment or property damage, etc., occurred, but under slightly different circumstances could have occurred.

- *Project* - All on-site work performed under the scope of work.

- *Sit*e - The area described in Section 1.2, Site and Facility Description, where the work is to be performed by BBL personnel and subcontractors.

- *Subcontractor* - Includes contractor personnel hired by BBL.

- *Support Zone (SZ)* - All areas of the site, except the EZ and CRZ. The SZ surrounds the CRZ and EZ. Support equipment and break areas are located in this zone.

- *Visitor* - All other personnel, except the on-site personnel.

- *Work Area* - The portion of the site where work activities are actively being performed. This area may change daily as work progresses and includes the SZ, CRZ, and EZ. If the work area is located in an area on site that is not contaminated, or suspected of being contaminated, the entire work area may be an SZ.

1.5 References

This HASP complies with applicable Occupational Safety and Health Administration (OSHA) regulations, United States Environmental Protection Agency (USEPA) regulations, and BBL health and safety policies and procedures. This plan follows the guidelines established in the following:

- *Standard Operating Safety Guides*, USEPA (Publication 9285.1-03, June 1992).

- *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, NIOSH, OSHA, USCG, USEPA (86116, October 1985).

- *Title 29 of the Code of Federal Regulations* (CFR), Part 1910.

- *Title 29 of the Code of Federal Regulations* (CFR), Part 1926.

- *Pocket Guide to Chemical Hazards*, DHHS, PHS, CDC, NIOSH (2003).

- *Threshold Limit Values*, ACGIH (2004).

- *Guide to Occupational Exposure Values*, ACGIH (2004).

- *Quick Selection Guide to Chemical Protective Clothing*, Forsberg, K. and S.Z. Mansdorf, 2nd Ed. (1993).

- *Health and Safety Policies and Procedures Manual*, BBL (2004).

2. Roles and Responsibilities

2.1 All Personnel

All BBL and subcontractor personnel must adhere to the procedures outlined in this HASP during the performance of their work. Each person is responsible for completing tasks safely, and reporting any unsafe acts or conditions to their supervisor. No person may work in a manner conflicting with these procedures. After due warnings, the PM will dismiss from the site any person or subcontractor who violates safety procedures.

All BBL and subcontractor personnel will receive training in accordance with applicable regulations, and be familiar with the requirements and procedures presented in this HASP prior to initiating site activities. In addition, all personnel will attend an initial hazard briefing prior to beginning work at the site.

The roles of BBL personnel and subcontractors are outlined in the following sections. Key project personnel and contacts are summarized in Table 2-1.

2.2 Stop Work Authority

Every BBL employee and BBL subcontractor is empowered, expected and has the responsibility to stop the work of another co-worker if the working conditions or behaviors are considered unsafe.

2.3 Short Service Employee (SSE) Program

Recognizing that employees who are new to the Firm are at a greater risk for incidents, the following guidelines are established to identify those employees and ease their transition. Short Service Employees (SSEs) will have an assigned field mentor to assist them in adjusting to the project requirements and procedures. SSEs will be identified in the field by wearing an orange hardhat or baseball-type cap.

- BBL employees new to the industry and new to BBL will be designated SSEs for 6 months.
- BBL employees experienced in the industry but new to BBL will be designated SSEs for 3-months.

Additionally, the following apply:

- A crew of two to three may have one SSE onsite;
- A crew of five may have two SSEs onsite; and
- A crew of 10 or more may have no more than three SSEs onsite.

2.4 BBL Personnel

2.4.1 Project Officer

The Project Officer (PO) is responsible for providing resources to assure project activities are completed in accordance with this HASP, and for meeting all regulatory and contractual requirements. The PO has the ultimate responsibility for LPS Stewardship.

2.4.2 Health and Safety Officer or Manager

The Health and Safety Officer (HSO) or the Health and Safety Manager (HSM) has overall responsibility for the technical health and safety aspects of the project, including review and approval of this HASP. Inquiries regarding BBL health and safety procedures, project procedures, and other technical or regulatory issues should be addressed to this individual. The HSO or HSM must approve changes or addenda to this HASP. The HSO or HSM will provide the process measures for implementation of LPS.

2.4.3 Project Manager

The Project Manager (PM) is responsible for verifying that project activities are completed in accordance with the requirements of this HASP. The PM is responsible for confirming that the Site Supervisor (SS) has the equipment, materials, and qualified personnel to fully implement the safety requirements of this HASP, and/or subcontractors assigned to this project meet the requirements established by BBL. It is also the responsibility of the PM to:

- consult with the HSO on site health and safety issues;
- verify that subcontractors meet health and safety requirements prior to commencing work;
- validate, via questioning, the performance of SPSAs;
- participate in LPO feedback sessions;
- review Incident Prevention Observation (LPO) forms;
- verify that all incidents are thoroughly investigated;
- report all Near-Misses to the HSO within 24 hours; validate that Near-Miss Investigation (NMI) corrective actions are implemented within the same time period;
- contact the PO immediately with 24 hours of notification of an injury or accident to schedule a Incident Investigation conference call;
- approve, in writing, addenda or modifications of this HASP; and
- suspend work or modify work practices, as necessary, for personal safety, protection of property, and regulatory compliance.

2.4.4 Health and Safety Supervisor

The Health and Safety Supervisor (HSS) is responsible for field health and safety issues, including the execution of this HASP. Questions in the field regarding health and safety procedures, project procedures, and other technical or regulatory issues should be addressed to this individual. The HSS will advise the PM on health and safety issues, and will establish and coordinate the project air monitoring program if one is deemed necessary (see Section 6.1, Air Monitoring). The HSS is the primary site contact on health and safety matters. It is the responsibility of the HSS to:

- provide onsite technical assistance, if necessary;
- participate in all incident investigations (IIs) and ensure that they are reported to the HSO and PM immediately;
- report all Near-Misses to Project Manager within 24 hours; begin NMI immediately and implement corrective actions;
- coordinate site and personal air monitoring as required, including equipment maintenance and calibration;
- conduct site safety orientation training and safety meetings;
- verify that BBL personnel and subcontractors have received the required physical examinations and medical certifications;
- review site activities with respect to compliance with this HASP;
- maintain required health and safety documents and records;
- assist the SS in instructing field personnel on project hazards and protective procedures;
- validate, via questioning, the performance of SPSAs;
- participate in LPO feedback sessions; and
- review LPO forms.

2.4.5 Site Supervisor

The Site Supervisor (SS) is responsible for implementing this HASP, including communicating requirements to onsite personnel and subcontractors. The SS will be responsible for informing the PM of changes in the work plan, procedures, or site conditions so that those changes may be addressed in this HASP. Other responsibilities are to:

- consult with the HSS on site health and safety issues;
- conduct LPOs at the site and complete the LPO forms;
- participate in all incident investigations (IIs) and ensure that they are reported to the HSS and PM immediately;
- report all Near-Misses to Project Manager within 24 hours; begin NMI immediately and implement corrective actions;
- validate, via questioning, the performance of SPSAs;
- stop work, as necessary, for personal safety, protection of property, and regulatory compliance;
- obtain a site map and determine and post routes to medical facilities and emergency telephone numbers;
- notify local public emergency representatives (as appropriate) of the nature of the site operations, and post their telephone numbers (i.e., local fire department personnel who would respond for a confined space rescue);
- observe onsite project personnel for signs of ill health effects;
- investigate and report any incidents to the HSS;
- verify that all onsite personnel have had applicable training;
- verify that onsite personnel are informed of the physical, chemical, and biological hazards associated with the site activities, and the procedures and protective equipment necessary to control the hazards; and
- issue/obtain any required work permits (hot work, confined space, etc.).

2.5 Subcontractors

Subcontractors and their personnel must understand and comply with applicable regulations and site requirements established in this HASP. Subcontractors may prepare their own site-specific HASP that must be consistent with the requirements of this HASP.

All subcontractor personnel will receive training in accordance with applicable regulations, and be familiar with the requirements and procedures contained in this HASP prior to initiating site activities. All subcontractor personnel will attend an initial hazard briefing prior to beginning work at the site. Additionally, onsite subcontractor personnel must attend and participate in the daily site safety meetings.

2.6 All Onsite Personnel

All onsite personnel (including subcontractors) must read and acknowledge their understanding of this HASP before commencing work, and abide by the requirements of the plan. All onsite personnel shall sign the HASP Acknowledgement Form following their review of this HASP.

All BBL and subcontractor personnel will receive training in accordance with applicable regulations, and be familiar with the requirements and procedures contained in this HASP prior to initiating site activities. In addition, all onsite personnel will attend an initial hazard briefing prior to beginning work at the site and the daily safety meetings.

All onsite personnel must perform a Safe Performance Self-Assessment (SPSA) prior to beginning each work activity. The SPSA process is presented in Section 4.1.1. This process must be performed prior to beginning each activity, and must be performed after any near miss or other incident in order to determine if it is safe to proceed. Onsite personnel will immediately report the following to the SS or HSS:

- personal injuries and illnesses no matter how minor;
- unexpected or uncontrolled release of chemical substances;
- symptoms of chemical exposure;
- unsafe or hazardous situations;
- unsafe or malfunctioning equipment;
- changes in site conditions that may affect the health and safety of project personnel;
- damage to equipment or property;
- situations or activities for which they are not properly trained; and
- near misses.

2.7 Visitors

All visitors to BBL work areas must check in with the SS. Visitors will be cautioned to avoid skin contact with surfaces, soils, groundwater, or other materials that may impacted or be suspected to be impacted by constituents of concern (COC).

Visitors requesting to observe work at the site must understand this document and acknowledge via signature. They must don appropriate personal protective equipment (PPE) prior to entry to the work area and must have the appropriate training and medical clearances to do so. If respiratory protective devices are necessary, visitors who wish to enter the work area must have been respirator-trained and fit tested for a respirator within the past 12 months.

TABLE 2-1
KEY PERSONNEL

Client		
Role	**Name**	**Address/Telephone No.**
NYSEG Project Manager	Tracy Blazicek, CHMM	NYSEG PO Box 5224 Binghamton, NY 13902 (607) 762-8839
BBL Personnel		
Role	**Name**	**Address/Telephone No.**
Project Officer	Frederick Kirschenheiter, P.E.	Blasland, Bouck & Lee, Inc. 6723 Towpath Road, P.O. Box 66 Syracuse, NY 13214-0066 Tel: (315) 446-9120, ext. 203
Project Manager	John C. Brussel, P.E.	Blasland, Bouck & Lee, Inc. 6723 Towpath Road, P.O. Box 66 Syracuse, NY 13214-0066 Tel: (315) 446-9120, ext. 441
Program Manager	Keith A. White, P.G.	Blasland, Bouck & Lee, Inc. 6723 Towpath Road, P.O. Box 66 Syracuse, NY 13214-0066 Tel: (315) 446-9120, ext. 530
Site Supervisor/Health and Safety Supervisor	David A. Cornell	Blasland, Bouck & Lee, Inc. 6723 Towpath Road, P.O. Box 66 Syracuse, NY 13214-0066 Tel: (315) 446-9120, ext. 379
Health and Safety Officer	Jay D. Keough, CIH	Blasland, Bouck & Lee, Inc. 8 South River Road Cranbury, NJ 08512 Tel: (609) 860-0590
Subcontractors		
Subcontractor/Role	**Name**	**Address/Telephone No.**
Parratt Wolff (drilling subcontractor)	Bill Morrow	Parratt Wolff Inc. 5879 Fisher Road, P.O. Box 56 East Syracuse, New York 13057 Tel: (315) 437-1429
STL - Edison	Carl Armbruster	Severn Trent Laboratories, Inc. 777 New Durham Road Edison, NJ 08817 Tel: 732-549-3900 x519

Key Agency Personnel		
Agency/Role	**Name**	**Address/Telephone No.**
New York State Department of Environmental Conservation (NYSDEC)	James A. Malcom, P.E.	NYSDEC 625 Broadway Albany, NY 12233 (518) 402-9669

3. Project Hazards and Control Measures

3.1 Introduction

Field activities will include the following tasks:

- Mobilization
- Soil Boring
- Sediment Probing
- Installation of Groundwater Monitoring Wells
- Monitoring Well Development
- Field Sampling
- Excavation of Test Pits
- Surveying
- Equipment Decontamination
- Demobilization

3.2 Job Hazard Assessment

A job hazard assessment identifies potential safety, health, and environmental hazards associated with each type of field activity. Because of the complex and changing nature of field projects, supervisors must continually inspect the work site to identify hazards that may harm site personnel, the community, or the environment. The SS must be aware of these changing conditions and discuss them with the HSS and the PM whenever these changes impact employee health, safety, the environment, or performance of the project. The SS will keep BBL and BBL subcontractor personnel informed of the changing conditions. A member of BBL's Corporate Health and Safety staff will write or approve addenda or revisions to this HASP as necessary. Specific JSAs for field activities are located in Attachment A.

3.3 Field Activities, Hazards, Control Procedures

The following sections discuss general safety hazards associated with specific field activities outlined in the scope of work for this project. BBL has also specified minimum safety precautions for various field activities. Each BBL subcontracted company must review these activities and safety procedures with respect to their own standard safe operating procedures. Each subcontracted company may utilize their own standard safe operating procedures provided the minimum requirements set forth in this HASP, 29 CFR 1910, and 29 CFR 1926 are met. Each subcontracted company is responsible for operating in a safe and healthful manner in order to protect their personnel and all site personnel.

3.4 Mobilization and Survey

Site mobilization and the survey may include the following activities:

- Determine the location of any overhead or other physical hazards;

- Survey of sample locations;
- Establish work areas; and
- Conducting a visual inspection of in-ground pipes, culverts, etc. at grade located throughout the site.

A break area will be set up outside of regulated work areas. Mobilization may involve clearing areas for the SZ and CRZ. During this initial phase, project personnel will walk the site to confirm the existence of anticipated hazards and identify safety and health issues that may have arisen since the writing of this HASP.

3.4.1 Hazards

The hazards of this phase of activity are associated with:

- Manual materials handling;
- Installing temporary on-site facilities; and
- Manual site preparation.

Manual materials handling and manual site preparation may cause blisters, sore muscles, and joint and skeletal injuries; manual materials handling may also present eye, contusion, and laceration hazards. Installing temporary field office and support facilities may expose personnel to electrical hazards, underground and overhead utilities, and physical injury due to manually lifting and moving materials. Conducting an investigation presents slip/trip/fall exposures as well as the potential for contact with various flora and fauna. The work area presents slip, trip, and fall hazards from irregular walking surfaces. Rainy weather areas may cause wet, muddy, slick walking surfaces, and unstable soil, these conditions may also exist along riverbanks.

Environmental hazards include:

- Plants, such as poison ivy and poison oak;
- Aggressive fauna, such as ticks, fleas, mosquitoes, wasps, spiders, and snakes;
- Weather, such as sunburn, lightning, rain, and heat- or cold-related illnesses;
- Pathogens, such as rabies, Lyme disease, and blood-borne pathogens; and
- Rivers and adjacent areas.

3.4.2 Control

In the event that work must be conducted in close proximity to a public roadway, or active public parking lots, site personnel must isolate the work area with barricades, signs, cones, caution tape, or other appropriate means to alert passing motorists to the presence of an active work area. Also, personnel who are exposed to vehicular traffic must wear an outer layer of orange warning garments, such as vests, jackets, or shirts. If work is performed in darkness, workers will be outfitted with reflective garments in either orange, white (including silver-coated reflective coatings or elements that reflect white light), yellow, fluorescent red-orange, or fluorescent yellow-orange.

Additional control procedures are discussed in Section 4, General Safety Practices.

3.5 Installation of Groundwater Monitoring Wells and Soil Borings

This task will consist of installing soil borings, monitoring wells, and/or piezometers at various locations at the site. Following installation of groundwater monitoring wells, the wells will be developed using standard operating procedures. Installing soil borings to collect soil samples may involve the use of conventional drill rig or direct-push-type boring equipment (Geoprobe® or equivalent). The equipment poses a hazard if it is not properly operated. Direct-push equipment is hydraulically powered and uses static force and dynamic percussion force to advance small-diameter sampling tools. The presence of overhead utilities and underground obstacles poses a hazard if boring equipment contacts them. As the hazards are similar to those encountered when using a conventional drill rig, the required control procedures are also the same as a conventional rig and are included in the following sections.

3.5.1 Drilling Hazards

The primary physical hazards for this activity are associated with the use of drilling equipment. Rig accidents can occur as a result of improperly placing the rig on uneven or unstable terrain, or failing to adequately secure the rig prior to the start of operations. Exposure to vehicular traffic may create hazards to personnel involved with drilling activities. Underground and overhead utility services can create hazardous conditions if contacted by drilling equipment. Tools and equipment, such as elevators, cat lines, and wire rope, have the potential for striking, pinning, or cutting personnel.

Wire Rope: Worn or frayed wire rope presents a laceration hazard if loose wires protrude from the main bundle.

Cat Lines: Cat lines are used on drilling rigs to hoist material. Hazardous incidents that occur during cat line operations may injure the employee doing the rigging as well as injure the operator. Minimal hoisting control causes sudden and erratic load movements, which may result in hand and foot injuries.

Working Surfaces: Slippery work surfaces can increase the likelihood of back injuries, overexertion injuries, and slips and falls.

Materials Handling: The most common type of accident that occurs in material handling operations is the "caught between" situation when a load is being handled and a finger or toe gets caught between two objects. Rolling stock can shift and/or fall from a pipe rack or truck bed.

Underground Utilities: Gas lines, electrical, phone, water, sewer and other underground utilities may present a hazard. Follow the requirements underground utility protection specified in section 3.8 of this HASP.

3.5.2 Drilling Safety Procedures

Drill Crews: All drillers must possess required state or local licenses to perform such work. All members of the drill crew shall receive Site-specific training prior to beginning work.

The driller is responsible for the safe operation of the drill rig, as well as the crew's adherence to the requirements of this HASP. The driller must ensure that all safety equipment is in proper condition and is properly used. The members of the crew must follow all instructions of the driller, wear all PPE, and be aware of all hazards and control procedures. The drill crews must participate in the Site safety meetings and be aware of all emergency procedures.

Rig Inspection: Each day, prior to the start of work, the driller and/or drill crew must inspect the drill rig and associated equipment. The following items must be inspected:

- vehicle condition;
- proper storage of equipment;
- condition and/or operation of all controls, wire rope, and hydraulic lines;
- fire extinguisher; and
- first aid kit.

Drill Rig Setup: The drill rig must be properly blocked and leveled prior to raising the derrick. The wheels that remain on the ground must be chocked. The leveling jacks shall not be raised until the derrick is lowered. The rig will be moved only after the derrick has been lowered.

Control: Before drilling, the existence and location of underground pipe, electrical equipment, and gas lines shall be determined. This will be done, if possible, by contacting the appropriate client representative to mark the location of the lines. If the client's knowledge of the area is incomplete, an appropriate device, such as a magnetometer, will be used to locate the line. The Underground/Overhead Utility Checklist (see Attachment F) shall be used to document that nearby utilities have been marked on the ground, and that the drilling areas have been cleared. The completed checklist will be in the possession of the SS prior to commencement of any intrusive investigation.

Control of vehicular traffic hazards is presented in Section 4.10 - Traffic Safety.

Combustible gas readings of the general work area will be made regularly (see Section 8 - Site Monitoring).

Operations must be suspended and corrective action taken if the airborne flammable concentration reaches 10% of the LEL in the immediate area (a one-foot radius) of the point of drilling, or near any other ignition sources.

Personnel shall not be permitted to ride the traveling block or elevators, nor will the cat line be used as a personnel carrier.

Overhead Electrical Clearances: If drilling is conducted in the vicinity of overhead power lines, the lines must be de-energized, or the equipment must be positioned such that no part, including the rig boom can come within the minimum clearances as follows:

TABLE 3-1
MINIMUM OVERHEAD ELECTRICAL CLEARANCES

Nominal System Voltage	Minimum Required Clearance
0-50kV	10 feet
51kV-100kV	12 feet
101kV-200kV	15 feet
201kV-300kV	20 feet
301kV-500kV	25 feet
501kV-750kV	35 feet
751-1000kV	45 feet

When the drill rig is in transit, with the boom lowered and no load, the equipment clearance must be at least 4 feet for voltages less than 50kV, 10 feet for voltages of 50kV to 345kV, and 16 feet for voltages above 345kV.

Rig Setup: The driller shall inspect all proposed well Sites prior to drilling operations to verify a stable surface exists for the setup of the drill rig. This is especially important in areas where soft, unstable terrain is common.

All rigs will be properly blocked and leveled prior to raising the derrick. Blocking provides a more stable drilling structure by evenly distributing the weight of the rig. Proper blocking ensures that differential settling of the rig does not occur. When the ground surface is soft or otherwise unstable, wooden blocks, at least 24 inches by 24 inches and 4 inches to 8 inches thick, shall be placed between the jack swivels and the ground. The emergency brake shall be engaged, and the wheels that are on the ground shall be chocked.

Hoisting Operations: Drillers shall not engage the rotary clutch without watching the rotary table, and ensuring it is clear of personnel and equipment.

Unless the drawworks is equipped with an automatic feed control, the brake should not be left unattended without first being tied down.

Auger strings or casing shall be picked up slowly.

During instances of unusual loading of the derrick or mast, such as when making an unusually hard pull, only the driller should be on the rig floor; no one else should be on the rig or derrick.

The driller shall test the brakes on the drawworks of the drill rig each day. The brakes shall be thoroughly inspected by a competent individual each week.

A hoisting line with a load imposed shall not be permitted to be in direct contact with any derrick member or stationary equipment, unless it has been specifically designed for line contact.

Workers shall not stand near the borehole whenever any wire line device is being run.

Hoisting control stations shall be kept clean and controls labeled as to their functions.

Cat Line Operations: Only experienced personnel will be allowed to operate the cat head controls. The kill switch must be clearly labeled and operational prior to operation of the cat line. The cat head area must be kept free of obstructions and entanglements.

The operator should not use more wraps than necessary to pick up the load. More than one layer of wrapping is not permitted.

Personnel shall not stand near, step over, or go under a cable or cat line that is under tension.

Employees rigging loads on cat lines shall:

- keep out from under the load;
- keep fingers and feet where they will not be crushed;
- be sure to signal clearly when the load is being picked up;
- use standard visual signals only and not depend on shouting to co-workers; and
- make sure the load is properly rigged, since a sudden jerk in the cat line will shift or drop the load.

Wire Rope: When two wires are broken, or rust or corrosion is found adjacent to a socket or end fitting, the wire rope shall be removed from service or resocketed. Special attention shall be given to the inspection of end fittings on boom support, pendants, and guy ropes.

Wire rope removed from service due to defects shall be cut up or plainly marked as being unfit for further use as rigging.

Wire rope clips attached with U-bolts shall have the U-bolts on the dead or short end of the rope; the clip nuts shall be re-tightened immediately after initial load carrying use and at frequent intervals thereafter.

When a wedge socket fastening is used, the dead or short end of the wire rope shall have a clip attached to it or it shall be looped back and secured to itself by a clip; the clip shall not be attached directly to the live end.

Protruding ends of strands in splices on slings and bridles shall be covered or blunted.

Except for eye splices in the ends of wires and for endless wire rope slings, wire rope used in hoisting, lowering, or pulling loads, shall consist of one continuous piece without knot or splice.

An eye splice made in any wire rope shall have not less than five full tucks.

Wire rope shall not be secured by knots. Wire rope clips shall not be used to splice rope.

Eyes in wire rope bridles, slings, or bull wires shall not be formed by wire clips or knots.

Auger Handling: Auger sections shall be transported by cart or carried by two persons. Individuals should not carry auger sections without assistance. Personnel carrying augur sections shall use proper lifting techniques.

Workers should not be permitted on top of the load during loading, unloading, or transferring of rolling stock.

When equipment is being hoisted, personnel should not stand where the bottom end of the equipment could whip and strike them.

Augers stored in racks, catwalks, or on flatbed trucks should be secured to prevent rolling.

3.6 Monitoring Well Development

Field operations will consist of developing the well after installation to remove material or contaminants from the well prior to its being placed in service.

3.6.1 Hazards

The physical hazards of monitoring well development are primarily associated with manipulating and operating the pump and its associated equipment. Other physical hazards of this phase of activity are associated with site conditions and manual materials handling. Equipment operation may present noise and vibration hazards, and the potential for employee contact with hot surfaces. Manual materials handling may cause blisters, sore muscles, and joint and/or skeletal injuries. The work area may present slip, trip, and fall hazards from scattered debris and wet or irregular walking surfaces. Wet weather may cause wet, muddy, and/or slick walking surfaces. Exposure to soil and water containing COCs is also possible.

Environmental hazards include plants, such as poison ivy and poison oak; aggressive fauna, such as ticks, fleas, mosquitoes, wasps, spiders, and snakes; weather, such as sunburn, lightning, rain, and heat- or cold-related illnesses; and pathogens, such as rabies, Lyme disease, and blood-borne pathogens.

3.6.2 Control

To control dermal exposure during monitoring well development activities, a minimum of Modified Level D protection will be worn. If necessary, based on field observations and site conditions, air monitoring may be conducted during groundwater sampling and monitoring activities to assess the potential for exposure to airborne COCs. If the results of air monitoring indicate the presence of organic vapors in a concentration causing concern, personnel will upgrade to Level C protection. Section 6.1, Air Monitoring, describes air monitoring requirements and action levels. Each level of personal protection is described in Section 5, Personal Protective Equipment. Control procedures for environmental and general hazards are discussed in Section 4, General Safety Practices.

3.7 Field Sampling

The following field sampling activities will be undertaken during this project:

- Groundwater sampling and NAPL monitoring/recovery.
- Soil sampling.
- River sediment sampling.

3.7.1 Groundwater Sampling and NAPL Monitoring/Recovery

Groundwater sampling will involve uncapping, purging (pumping water out of the well), measuring the depth to groundwater and/or non-aqueous phase liquid (NAPL), collecting groundwater samples, and/or removing and containerizing NAPL (if present), and monitoring new or existing monitoring wells. A mechanical pump may be used to purge the wells and can be hand-, gas-, or electric-operated. Water samples taken from the wells are then placed in containers and shipped to analytical laboratory for analysis. The physical hazards of these operations are primarily associated with the sample collection methods and procedures used.

3.7.1.1 Hazards

Inhalation and absorption of COCs are the primary routes of entry associated with groundwater sampling, due to the manipulation of sample media and equipment, manual transfer of media into sample containers, and proximity of operations to the breathing zone. During this project, several different groundwater sampling methodologies may be used based on equipment accessibility and the types of materials to be sampled. These sampling methods may include hand or mechanical bailing. The primary hazards associated with these specific sampling procedures are not potentially serious; however, other operations in the area, or the conditions under which samples must be collected may present chemical and physical hazards. The hazards directly associated with groundwater sampling procedures are generally limited to strains or sprains from hand bailing, and potential eye hazards. Exposure to water containing COCs is also possible.

The flora and fauna of the site may present hazards of poison ivy, poison oak, ticks, fleas, mosquitoes, wasps, spiders, and snakes. The work area presents slip, trip, and fall hazards from scattered debris and irregular walking surfaces. Rainy weather may cause wet, muddy, slick walking surfaces and unstable soil. Freezing weather hazards include frozen, slick, and irregular walking surfaces.

3.7.1.2 Control

To control dermal exposure during groundwater sampling activities, a minimum of Modified Level D protection will be worn. If necessary, based on field observations and site conditions, air monitoring may be conducted during groundwater sampling to assess the potential for exposure to airborne COCs. If the results of air monitoring indicate the presence of organic vapors in a concentration causing concern, personnel will upgrade to Level C protection. Section 6.1 - Air Monitoring describes air monitoring requirements and action levels. Each level of personal protection is described in Section 5 - Personal Protective Equipment. Control procedures for environmental and general hazards are discussed in Section 4 - General Site Safety Procedures.

3.7.2 Soil Sampling

This task will include the collection of soil samples from soil borings and/or test pits. The physical hazards of these operations are primarily associated with the sample collection methods and procedures used. Soil samples will be taken via shovel or trowel from the surface samples and either out of the excavator bucket or from a spoil pile for the test pits. In addition, personnel may be exposed to hazards associated with working in or near excavations and heavy equipment.

3.7.2.1 Hazards

Inhalation and absorption of COCs are the primary routes of entry associated with soil sampling due to the manipulation of sample media and equipment, manual transfer of media into sample containers, and proximity of operations to the breathing zone. During this project, several different soil sampling methodologies may be used based on equipment accessibility and the types of materials to be sampled. These sampling methods may include the use of sampling spoons, or trowels. The primary hazards associated with these specific sampling procedures are not potentially serious; however, other operations in the area or the conditions under which samples must be collected may present chemical and physical hazards. The hazards directly associated with soil sampling procedures are generally limited to strains or sprains, and potential eye hazards. Exposure to soil containing COCs is also possible. In addition to the safety hazards specific to sampling operations, hazards associated with the operation of vehicles (especially large vehicles with limited operator visibility), is a concern. Of particular concern will be the backing up of trucks, rigs, and other support vehicles.

The flora and fauna of the site may present hazards of poison ivy, poison oak, ticks, ants, fleas, mosquitoes, wasps, spiders, and snakes. The work area presents slip, trip, and fall hazards from scattered debris and irregular walking surfaces. Rainy weather may cause wet, muddy, slick walking surfaces and unstable soil. Freezing weather hazards include frozen, slick, and irregular walking surfaces.

3.7.2.2 Control

To control dermal exposure during soil sampling activities, a minimum of Modified Level D protection will be worn. Avoid laying tools and equipment on the ground to avoid contact with native poisonous or irritating flora and fauna. If necessary, based on field observations and site conditions, air monitoring may be conducted during soil sampling activities to assess the potential for exposure to airborne COCs. If the results of air monitoring indicate the presence of organic vapors in a concentration causing concern, personnel will upgrade to Level C protection. Each level of personal protection is described in Section 5 - Personal Protective Equipment. Control procedures for environmental and general hazards are discussed in Section 4 - General Safety Practices. Safety hazards and procedures associated with activities conducted around excavations are presented in the following subsections.

3.7.3 Sediment and Water-Column Sampling

Sediment and water-column sampling operations involve collecting samples for subsequent field and laboratory analysis. The physical hazards of sediment sampling are primarily associated with the sample collection methods, procedures used, and the environment itself. Working on or near water also presents the risk of drowning, if proper procedures are not instituted.

3.7.3.1 Hazards

Inhalation and absorption of COCs are the primary routes of entry associated with sediment and water-column sampling due to the manipulation of sample media and equipment, manual transfer of media into sample containers, and proximity of operations to the breathing zone. During this project, several different sampling methodologies may be used based on equipment accessibility and the types of materials to be sampled. These sampling methods may include sampling probes, sediment traps, or sampling poles. The primary hazards associated with these specific sampling procedures are not potentially serious; however, other operations in the area or the conditions under which samples must be collected may present chemical and physical hazards. The hazards directly associated with sediment sampling procedures are generally limited to strains or sprains and potential eye hazards. Potential chemical hazards may include contact with media containing site COCs and potential contact with chemicals used for equipment decontamination. In addition to the safety hazards specific to sample collection, hazards associated with working on, in, or near water or in a boat will be a concern. Of particular concern will be boating safety and operation of other support equipment. The control measures to address these hazards are presented in Section 3.7.3.3.

The flora and fauna of the site may present hazards of poison ivy, poison oak, ticks, fleas, mosquitoes, wasps, spiders, and snakes. The work area presents slip, trip, and fall hazards from scattered debris and irregular walking surfaces. Rainy weather may cause wet, muddy, slick walking surfaces and unstable soil. Freezing weather hazards include frozen, slick, and irregular walking surfaces.

3.7.3.2 Control

To control dermal exposure during sediment sampling activities, a minimum of Modified Level D protection will be worn. If necessary, based on field observations and site conditions, air monitoring may be conducted during sediment sampling activities. If the results of air monitoring indicate the presence of airborne contaminants in a concentration causing concern, personnel will upgrade to Level C protection. Section 6.1, Air

Monitoring, describes air monitoring requirements and action levels. Each level of personal protection is described in Section 5, Personal Protective Equipment. Control procedures for environmental and general hazards are discussed in Section 4, General Safety Practices. The following sections provide general safety procedures for boat-based sampling, wader use, and working near water. In addition, the items on the Sediment Sampling Checklist (see Attachment K) must be addressed and the checklist must be in the possession of the SS prior to initiating sediment or water-column sampling activities.

3.7.3.3 Water and Boating Hazards

BBL personnel working over, adjacent to, or near water (within 6 feet of the edge), where the danger of drowning exists, must wear a United States Coast Guard- (USCG-) approved life jackets or buoyant work vests. Prior to and after each use, the buoyant work vests or life preservers must be inspected for defects that would alter their strength and buoyancy. Defective units must be removed from service. Ring buoys with at least 90 feet of line must be provided and readily available for emergency rescue operations. Distance from ring buoys must not exceed 200 feet. At least one boat must be immediately available at locations where employees are working over or adjacent to water.

Boating Hazards and Safety Precautions

Working from a boat presents the obvious hazard of drowning, but several other hazards exist. Powered craft carry a fuel supply, with the potential for fire or explosion if vapors accumulate and reach an ignition source. Weather, currents, and other watercraft may also pose significant hazards to the crew.

In land-based field operations, proper training and equipment are essential to completing a project efficiently and safely. This also holds true for operations conducted on or adjacent to bodies of water. BBL is strongly committed to familiarizing all employees, who operate boats or conduct work adjacent to bodies of water, with the hazards of water operations and the proper protective measures that must be taken to prevent injury.

The type of boats to be used may include “Jon” boats, electrofishing boats, barges, airboats, and other small powerboats (less than 20 feet). This section outlines the precautions that will be taken to maintain the safety of BBL personnel.

At a minimum, each employee working from a boat is required to participate in a boating safety training session conducted during the daily safety meeting. The training session must provide instruction on the following topics:

- Proper boat and safety equipment inspections;
- Content and frequency of equipment safety inspections;
- Proper use of on-board safety equipment, including fire extinguisher, radio or cellular phone, flares, horn, etc.;
- Proper procedures for completing and filing a float plan;
- Appropriate boating “rules-of-the-road;”
- Emergency procedures in the event of capsizing or being thrown overboard; and

- Different types of personal floatation devices (PFDs), and their proper inspection and use.

Prior to each day or shift of operations, a boat inspection must be conducted by the boat operator/skipper/SS. This inspection must be conducted in accordance with accepted USCG and any applicable state boating safety inspection procedures. The inspection must verify that necessary safety equipment is aboard, functioning properly, and that all crew members are aware of proper procedures that are to be followed on the water. In addition, this information must be reviewed during the daily tailgate safety meeting to confirm that the procedures have been followed and all crew members are satisfied as to its completion.

It will be the responsibility of the SS to confirm that daily boat and equipment inspections are completed and documented, and daily tailgate safety meetings are conducted. The following safety procedures must be observed at all times:

- Boat(s) must not be overloaded with equipment or personnel.
- Loads must be distributed evenly throughout the boat.
- PFD Types I, II, or III must be worn at all times when working on or adjacent to the water.
- All PFDs must be properly inspected to confirm that appropriate USCG approvals and ratings information is available.
- At least one Type IV PFD (seat cushion, ring buoy) must be available on board.
- An audible signal or alarm (capable of being heard up to ½ mile away) must be maintained in each boat.
- Each boat must be equipped with a ship-to-shore radio, cellular phone, and/or "walkie-talkie" capable of contacting the USCG, Marine police, or other onshore station to call for help in an emergency.
- Each boat must be equipped with some type of visual display signal or device (e.g., flares or appropriate distress flag).
- All powerboats must have a valid state registration. This registration must be maintained on the boat and, as necessary, be made available for USCG or Marine police inspection.
- At a minimum, each powerboat must be equipped with a Type 4-A, 10-B, C-rated fire extinguisher.
- Boats must not be operated at night without proper lighting and the capability for making visual distress signals.

In addition to PFDs, personnel who are working in boats over water when water temperatures are below 50°F must be equipped with thermal-protective clothing and equipment (wet suits, dry suits, etc.). The thermal-protective clothing must be adequate to protect personnel from hypothermic effects of immersion in water at the temperatures encountered.

Waders

Sampling activities may be done using hip waders and the required level of PPE. Waders must be inspected prior to donning for holes, punctures, tears, or any other defect (i.e., missing straps) that would allow water to enter. Personnel must wear a USCG-approved PFD or buoyant work vest during all activities conducted in water. Prior to each use, the PFD or work vest must be inspected for defects that may alter its strength or buoyancy. Defective units must be tagged "**Do Not Use**" and removed from service. The "buddy system" will be strictly adhered to during any water-related activities. At no time will anyone enter the water without another individual readily available to contact emergency services.

In addition to the drowning hazards associated with working on or near the water, there exists the possibility for slips, trips, or falls caused by slippery, unstable, and irregular walking surfaces. Waders used for sampling activities must be properly sized and provide the wearer with adequate traction.

3.8 Excavation of Test Pits

Test pits will be excavated as part of the site investigation. No BBL or subcontractor personnel will enter the test pits

The physical hazards involved with excavating soil are related to the presence of overhead and underground installations, the excavation itself and the operation of heavy equipment. The presence of overhead utilities, such as power lines, requires careful positioning of the excavating equipment to maintain a safe distance between the lines and the closest part of the equipment.

Gas lines and other underground utilities are expected at the NYSEG site. Dig Safely New York requires a call at least two full working days before you dig 1-800-962-7962. Be prepared to provide Dig Safely New York with information about the project including location, address, contact information, two nearest cross streets as well as any special instructions that are important to your specific location request.

Excavations pose significant hazards to employees if they are not carefully controlled. There exists a chance for the excavation to collapse if it is not dug properly, sloped, benched, or shored. Since no personnel will be entering the excavation, the protective systems specified in 29 Code of Federal Regulations (CFR) 1926 Subpart P are not required. The excavation must however be constructed so as to not present a hazard to personnel working in the area or to the public. This includes precautions to prevent a cave-in or collapse which could impact people standing or working near the top to the test pit, and barricading or other precautions to protect from fall hazards.

The following control procedures are required during soil sampling activities:

- Sampling activities must be done remotely whenever feasible.
- Noise also may present a hazard. Heavy equipment operation frequently results in noise levels exceeding 85 dBA, requiring the use of hearing protection.
- At the end of each workday, open test-pit excavations will be backfilled and equipment will be moved to a location away from high-voltage electrical equipment and away from routes necessary to access high-voltage electrical equipment.
- Airborne concentrations of COC in the site soil and the dust from the excavation procedure pose the potential for inhalation exposure. PPE for this phase is described in Section 5, Personal Protective Equipment. Airborne particulate generation will be controlled during site excavations. Dry, dusty soil will

be wetted with a water spray from a potable water source to control the generation of dust. Soil will not be wetted to a degree that will cause runoff or erosion.

- Before excavation activities commence, the existence and location of underground pipe, electrical equipment, and gas lines must be determined. The UFPO must be contacted at least 1 week, but no more than 2 weeks, prior to subsurface activities. The SS will meet with electrical and natural gas locators onsite prior to marking out the underground utilities. During this meeting, the SS will provide the electric and natural gas locators with a site figure that shows the locations where excavation and drilling activities will be completed. The SS will conduct a site walkover with the electrical and natural gas locators to visually identify each location where excavation and drilling activities are to be completed during site operations. The Underground/Overhead Utility Checklist (see Attachment F) must be used to document that nearby utilities have been marked on the ground, and that the excavation and drilling areas have been cleared. The completed Underground/Overhead Utility Checklist will be in the possession of the SS prior to commencing any intrusive investigation.

- If excavation operations are located near underground installations, the exact location of the installations must be determined by safe and acceptable means. Subsurface work conducted near expected utility locations will be conducted with a hand auger or shovel until utilities can be located. While the excavation is open, underground installations must be protected, supported, or removed as necessary to safeguard employees.

3.8.1 Overhead Electrical Clearances

At the NYSEG Binghamton MGP Site, overhead power lines are located along Washington Street and Water Street on the east and west sides of the site. There are also power lines to existing buildings on the site.

If excavation activities are conducted in the vicinity of overhead power lines, the power to the lines must be de-energized, tested de-energized, marked up, and guaranteed, or the equipment must be positioned such that no part, including the excavation boom, can come within the minimum clearances outlined in Table 3-1.

When excavation equipment is in transit, the equipment clearance must be at least 4 feet for voltages less than 50kV, 10 feet for voltages of 50kV to 345kV, and 16 feet for voltages above 345kV.

3.8.2 Excavation Entry Procedure

BBL Employees will not enter any excavations. All sampling will be done out of the bucket, and visual inspections from a safe location outside of the excavation.

3.8.3 Heavy Equipment Operation

Excavation activities involve using heavy equipment to remove, transport, and replace earthen materials. During field activities, BBL and BBL subcontractor personnel may be working in areas where heavy equipment is in operation. Heavy equipment operation will be conducted in accordance with this section and appropriate federal and state regulations.

Heavy equipment operation may take place in public areas of the NYSEG Binghamton MGP Site such as parking lots and roadways. Additional precautions will be taken to protect the public during the operation of heavy equipment. These precautions include additional flaggers, spotters, cones, or barricades whenever needed.

The physical hazards involved with working near heavy equipment relate to the equipment itself and the site environment. There exists a potential for incidents involving personnel being struck by or against heavy equipment or materials, resulting in fractures, cuts, punctures, or abrasions. Heavy equipment operation may present noise and vibration hazards, and a potential for contact with moving parts or hot surfaces to equipment operators. Walking and working surfaces may involve slip, trip, and fall hazards. Slippery work surfaces can increase the likelihood of back injuries, overexertion injuries, and slips and falls. Noise may also present a hazard. Heavy equipment operation frequently results in high noise levels.

Audible Alarms

Every vehicle used to haul dirt, rock, concrete, or other construction material must be equipped with a warning device that operates automatically while the vehicle is backing. The warning sound must be of such magnitude that it will normally be audible from a distance of 200 feet and will sound immediately on backing. In congested areas or areas with high ambient noise that obscures the audible alarm, a signaler, in clear view of the operator, must direct the backing operation. Other vehicles, if operating in areas where their backward movement would constitute a hazard to employees working in the area on foot and where the operator's vision is obstructed to the rear of the vehicle, must be equipped with an effective device or method to safeguard employees such as:

- an automatic backup audible alarm that would sound immediately on backing;
- an automatic braking device at the rear of the vehicle that will apply the service brake immediately on contact with any obstruction to the rear; or
- in lieu of the above requirements, administrative controls must be established such as:

  - a spotter or flagger in clear view of the operator who must direct the backing operation;
  - other procedures that will require the operator to dismount and circle the vehicle immediately prior to starting a backup operation;
  - prohibiting all foot traffic in the work area; and
  - other means must be provided that will provide safety equivalent to the foregoing for personnel working in the area.

The operator of all vehicles must not leave the controls of the vehicle while it is moving under its own engine power. Hauling or earth-moving operations must be controlled in such a manner as to confirm that equipment or vehicle operators know of the presence of other personnel in the areas of their operations.

Equipment Inspection and Maintenance

All vehicles in use must be checked at the beginning of each shift to confirm that the following parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use:

- service brakes, including trailer brake connections;
- parking system (hand brake);
- emergency stopping system (brake);
- tires;
- horn;

- steering mechanism;
- coupling devices;
- seat belts;
- operating controls; and
- safety devices.

All defects affecting safe operation must be corrected before the vehicle is placed in service. These requirements also apply to equipment such as lights, reflectors, windshield wipers, defrosters, fire extinguishers, etc., where such equipment is necessary.

Vehicle engines must not be allowed to run in closed garages or other enclosed places unless vents are provided that effectively remove the exhaust gases from the building.

Except for emergency field repairs, a safety tire rack, cage, or equivalent protection must be used when inflating truck or equipment tires after mounting on a rim, if such tires depend on a locking ring or similar device to hold them on the rim.

No repairs must be attempted on power equipment until arrangements are made to eliminate the possibility of injury caused by sudden movements or operation of the equipment or its parts. When the equipment being repaired is a bulldozer, carryall, ripper, or other machine having sharp or heavy moving parts such as blades, beds, or gates, such parts must be lowered to the ground or securely and positively blocked in an inoperative position.

All controls must be in a neutral position, with the engine(s) stopped and brakes set, unless work being performed requires otherwise. Trucks with dump bodies must be equipped with positive means of support, permanently attached, and capable of being locked in position to prevent accidental lowering of the body while maintenance or inspection work is being done. In all cases where the body is raised for any work, the locking device must be used.

Equipment Parking and Loading

Whenever equipment is parked, the parking brake must be set. Equipment parked on inclines must have the wheels chocked and parking brake set, or be otherwise prevented from moving by effective mechanical means.

Scissor points on all front-end loaders, which constitute a hazard to the operator, must be adequately guarded. A loader must not travel without adequate visibility for the driver and stability of the equipment. No loading device must be left unattended until the load or bucket is lowered to the ground, unless proper precautions such as blocking are taken to prevent accidental lowering.

Equipment Fueling

No internal combustion engine fuel tank must be refilled with a flammable liquid while the engine is running. Fueling must be done in such a manner that the likelihood of spillage is minimal. If a spill occurs, it must be contained and cleaned, or equivalent action taken to control vapors before restarting the engine. Fuel tank caps must be replaced before starting the engine.

Good metal to metal contact must be kept between fuel supply tank or nozzle of supply hose and the fuel tank. No open lights, welding, or sparking equipment must be used near internal combustion equipment being fueled or near storage tanks. Smoking is not permitted at or near the gasoline storage area or on equipment being fueled. A conspicuous sign must be posted in each fuel storage and fueling area stating: "**No Smoking Within 50 Feet**" Class I liquids must not be dispensed by pressure from drums, barrels, and similar containers. Approved pumps taking suction through the top of the container or approved self-closing faucets must be used. No repairs must be made to equipment while it is being fueled.

Each fuel storage tank or drum must have the word "flammable" conspicuously marked thereon, and should also have a similarly sized word indicating the contents of the container. A fire extinguisher rated 20:BC or larger must be in a location accessible to the fueling area. All fuel storage tanks, drums, or safety cans must be properly marked and of the proper type.

Additional Safety Requirements

To protect onsite personnel against hazards associated with materials handling, and to prevent injury due to unsafe heavy equipment operation, only properly trained and authorized personnel will be allowed to operate heavy equipment. All materials handling equipment will be maintained in a safe operating condition and inspected daily prior to use.

Additional heavy equipment safety requirements include, but are not limited to:

- Prior to operating any heavy equipment, the authorized operator must conduct a pre-operation inspection to determine if the heavy equipment is in safe operating condition prior to each work shift.
- All mobile equipment must be equipped with an audible back-up alarm.
- Personnel will not be allowed to stand or pass under the elevated portion of any heavy equipment, whether loaded or empty.
- Personnel will not place arms and legs between pinch or scissor points of the equipment, or outside the operator enclosure.
- A safe distance must be maintained from the edge of excavations, ditches, ramps, or platforms.
- Operators will maintain sufficient clearance under overhead utilities, installations, lights, pipes, etc.
- Heavy equipment must never be used for lifting or transporting personnel.
- The operator is required to look in the direction of, and maintain a clear view of the path of travel.
- Heavy equipment must not be operated without an overhead guard and roll-over protection to protect the operator against falling objects and equipment roll-over.
- Heavy equipment must not be driven up to anyone standing in front of any object.
- Stunt driving and horseplay are strictly prohibited.
- Operators will yield the right-of-way to other site vehicles.
- Other heavy equipment traveling in the same direction at intersections, blind spots, or other dangerous locations, must not be passed.

- A safe distance must be maintained from other heavy equipment, and the equipment must be kept under control at all times.

- The heavy equipment operator must slow down for wet and slippery conditions. Under all travel conditions, the equipment will be operated at a speed that will permit it to be brought to a stop safely.

- Operators will avoid running over loose objects on operating surfaces.

- Grades and ramps must be ascended and descended slowly.

- On all grades, the load will be tilted back and raised only as far as necessary to clear the operating surface.

- The operator will slow down and sound the horn at intersections, when entering buildings, and other locations where vision may be obstructed.

- If the load being carried obstructs forward view, the operator will travel with the load trailing.

- While negotiating turns, speed will be reduced to a safe rate, and turning will be in done a smooth, sweeping motion to avoid abrupt turns and potential equipment or load upset.

- Authorized operators will only handle stable or safely arranged loads that are within the rated capacity of the heavy equipment and will not affect the stability of the heavy equipment.

- When a piece of heavy equipment is left unattended, hydraulics will be fully lowered, controls will be neutralized, power will be shut off, and brakes set. Wheels will be blocked or chocked if the heavy equipment is parked on an incline. When internal combustion-engine-powered heavy equipment is used indoors, near confined spaces, or near excavations, carbon monoxide levels must be monitored to prevent personnel exposure.

Work may be performed on or near public parking areas and roadways of the NYSEG Binghamton Former MGP Site initial site.. This may make a separate decontamination area impractical. To minimize the need for decontamination and to reduce the risk of spread of contaminants into public areas, contamination minimization and control practices should be implemented to minimize and control contamination during drilling and other work tasks. This includes covering areas and equipment with tarps, minimizing the spread of potentially contaminated soil and water, and minimizing the size of the EZ.

All equipment is decontaminated before leaving the site. In addition, all operations that have the potential to generate or release hazardous material will be conducted in a controlled area using the appropriate engineering controls. Specific decontamination techniques will be established based on site conditions. Decontamination procedures will be reviewed with all personnel onsite. A decontamination pad on a suitable surface (concrete or paved area) with polyethylene sheeting or other appropriate containment system will be established if needed. Pressure washing with manual scrub brushing as needed will be used to decontaminate equipment. COC-impacted equipment will be determined “clean” by visually inspecting all equipment.

The decontamination facility will be inspected daily for evidence of leaks or loss of integrity to the containment system. If any deficiencies are noted they will be corrected immediately. All wastewater and waste materials generated onsite will be contained in the decontamination system for characterization and proper disposal.

Personnel involved in decontamination activities may be exposed to skin contact with contaminated materials and chemicals brought to the site as part of the project work. All personnel will review the operating procedures and PPE prior to decontamination. Personnel involved in decontamination activities must wear PPE that is appropriate for the task, and no more than one level below the level worn by personnel working in the EZ.

3.9 Demobilization

Demobilization involves removing all tools, equipment, supplies, and vehicles brought to the site. The hazards of this phase of activity are associated with heavy equipment operation and manual materials handling.

3.9.1 Hazards

Manual materials handling may cause blisters, sore muscles, and joint and skeletal injuries; and may present eye, contusion, and laceration hazards. Heavy equipment operation presents noise and vibration hazards, and hot surfaces to operators. Personnel in the vicinity of heavy equipment operation may be exposed to physical hazards resulting in fractures, contusions, and lacerations, and may be exposed to high noise levels. The work area presents slip, trip, and fall hazards from scattered debris and irregular walking surfaces. Rainy weather may cause wet, muddy, slick walking surfaces, and unstable soil. Freezing weather hazards include frozen, slick, and irregular walking surfaces.

Environmental hazards include plants such as poison ivy and poison oak; aggressive fauna such as ticks, fleas, mosquitoes, wasps, spiders, and snakes; weather such as sunburn, lightning, rain, and heat- or cold-related illnesses; and pathogens such as rabies, Lyme disease, and blood-borne pathogens.

3.9.2 Control

Control procedures for these hazards are discussed in Section 4.

3.10 Chemical Hazards

The chemical hazards associated with site operations are related to inhalation, ingestion, and skin exposure to site COCs including polynuclear aromatic hydrocarbons PAHs (coal tar pitch volatiles) benzene, toluene, ethylbenzene, xylene (BTEX), cyanide, and PCBs.

Concentrations of airborne COCs during site tasks may be measurable, and will require air monitoring during intrusive operations. Air monitoring requirements for site tasks are outlined in Section 6.1.

Hexane, Nitric Acid, Hexanol, detergents and degreasers will be used to decontaminate equipment and sampling apparatus. These materials also present dermal and inhalation exposure hazards.

The potential for inhalation of site COCs and decontamination chemicals is moderate. The potential for dermal contact with soil containing site COCs during soil sampling operations is moderate. The potential for dermal contact with decon chemicals during decontamination operations is moderate. The Chemical Hazard Information Table located at Attachment M lists the chemical, physical, and toxicological properties of major site COCs. Material Safety Data Sheets (MSDS) for the COCs are included in Attachment N.

4. General Safety Practices

4.1 General Safety Rules

General safety rules for site activities include, but are not limited to, the following:

- At least one copy of this HASP must be in a location at the site that is readily available to personnel, and all project personnel shall review the plan prior to starting work.

- Consume or use food, beverages, chewing gum, and tobacco products only in the SZ or other designated area outside the EZ and CRZ. Cosmetics shall not be applied in the EZ or CRZ.

- Wash hands before eating, drinking, smoking, or using toilet facilities.

- Wear all PPE as required, and stop work and replace damaged PPE immediately.

- Secure disposable coveralls, boots, and gloves at the wrists and legs and ensure closure of the suit around the neck.

- Upon skin contact with materials that may be impacted by COC, remove contaminated clothing and wash the affected area immediately. Contaminated clothing must be changed. Any skin contact with materials potentially impacted by COC must be reported to the SS or HSS immediately. If needed, medical attention should be sought.

- Practice contamination avoidance. Avoid contact with surfaces either suspected or known to be impacted by COC, such as standing water, mud, or discolored soil. Equipment must be stored on elevated or protected surfaces to reduce the potential for incidental contamination.

- Remove PPE as required in the CRZ to limit the spread of COC-containing materials.

- At the end of each shift or as required, dispose of all single-use coveralls, soiled gloves, and respirator cartridges in designated receptacles designated for this purpose.

- Removing soil containing site COC from protective clothing or equipment with compressed air, shaking, or any other means that disperses contaminants into the air is prohibited.

- Inspect all non-disposable PPE for contamination in the CRZ. Any PPE found to be contaminated must be decontaminated or disposed of appropriately.

- Recognize emergency signals used for evacuation, injury, fire, etc.

- Report all injuries, illnesses, near misses, and unsafe conditions or work practices to the SS or HSS.

- Use the "buddy system" during all operations requiring Level C PPE, and when appropriate, during Modified Level D operations.

- Obey all warning signs, tags, and barriers. Do not remove any warnings unless authorized to do so.

- Use, adjust, alter, and repair equipment only if trained and authorized to do so, and in accordance with the manufacturer's directions.

- Personnel are to perform only tasks for which they have been properly trained and will advise their supervisor if they have been assigned a task for which they are not trained.

- The presence or consumption of alcoholic beverages or illicit drugs during the workday, including breaks, is strictly prohibited. If you must take prescription or over the counter medications that indicate precautions against operating heavy equipment or the potential for drowsiness you should notify your supervisor.

- Remain upwind during site activities whenever possible.

4.1.1 Safe Performance Self-Assessment

All onsite personnel are required to perform a Safety Performance Self-Assessment (SPSA) prior to beginning any activity. This three-step process requires each individual to:

- *assess* the risk of the task to be performed. Ask the following questions:
  - What could go wrong?
  - What is the worst thing that could happen if something does go wrong?
- *analyze* the ways the risk can be reduced. Ask the following questions:
  - Do I have all the necessary training and knowledge to do this task safely?
  - Do I have all the proper tools and PPE?
- *act* to control the risk and perform the task safely.
  - Take the necessary action to perform the job safely.
  - Follow written procedures, and ask for assistance if necessary.

This process must be performed prior to beginning any activity, and must be performed after any near miss or other incident in order to determine if it is safe to proceed.

4.1.1.1 Incident Investigation

An incident is any of the following events: first aid cases, injuries, illnesses, near misses, spills/leaks, equipment and property damage, motor vehicle accidents, regulatory violations, fires, and business interruptions. All incidents shall be investigated within 24 hours and reported to the PM, the PO and the HSO. In the event that one of those individuals cannot be contacted, a voice message should be left and the next individual in the chain should be contacted. Follow-up with the absent individual should occur as soon as possible. See the below flowchart.

The purpose of an Incident Investigation (II) is to prevent the recurrence of a similar hazardous event. An II investigates all incidents in the same manner. Using the information gathered during an II, appropriate measures will be taken to protect personnel from the hazard in question. The II form is included in Attachment D.

4.1.1.2 Loss Prevention Observation

The SS or the HSS will perform the Loss Prevention Observation (LPO). An LPO form is provided in Attachment C. The purpose of the LPO is to identify and correct potential hazards, and to positively reinforce behaviors and practices that are correct. The SS or HSS must identify potential deviations from safe work practices that could possibly result in an incident, and take prompt corrective action. The LPO process steps are:

- Identify tasks that have the greatest potential for hazardous incidents.
- Review the standard procedure for completing the task.
- Discuss with the observed employee the task and the SS/HSS role in observing the task.
- Observe the employee completing the task.
- Reference the LPO form for criteria. Complete the form, documenting positive, as well as areas in need of improvement.
- Discuss the results of the LPO with the employee. Discuss corrective action necessary.
- Implement corrective action.
- Communicate the results of the LPO and corrective action to the PM and the HSO.

4.1.1.3 Job Safety Analysis

A Job Safety Analysis (JSA) is a tool used of identifying potential hazards and developing corrective or protective systems to eliminate the hazard. A JSA lists all the potential hazards associated with an activity. Hazards may be physical, such as lifting hazards or eye hazards, or environmental, such as weather or biological (stinging insects, snakes, etc.). Following the identification of the hazards associated with an activity, control measures are evaluated and protective measures or procedures are then instituted. JSAs are reviewed periodically to ensure that the procedures and protective equipment specified for each activity are current and technically correct. Any changes in site conditions and/or the scope of work may require a review and modification to the JSA in question. During this review process, comments on the JSA and its procedures should be obtained from personnel associated with the activity being analyzed.

4.2 Buddy System

Onsite personnel must use the buddy system as required by operations. Use of the "buddy system" is required during all operations requiring Level C to Level A PPE, and when appropriate, during Level D operations. Crewmembers must observe each other for signs of chemical exposure, and heat or cold stress. Indications of adverse effects include, but are not limited to:

- changes in complexion and skin coloration;
- changes in coordination;
- changes in demeanor;

- excessive salivation and pupillary response; and
- changes in speech pattern.

Crewmembers must also be aware of the potential exposure to possible safety hazards, unsafe acts, or non-compliance with safety procedures.

Field personnel must inform their partners or fellow crewmembers of non-visible effects of exposure to toxic materials that they may be experiencing. The symptoms of such exposure may include, but are not limited to:

- headaches;
- dizziness;
- nausea;
- blurred vision;
- cramps; and
- irritation of eyes, skin, or respiratory tract.

If protective equipment or noise levels impair communications, prearranged hand signals must be used for communication. Personnel must stay within line of sight of another team member.

4.3 Heat Stress

Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload, etc., as well as the physical and conditioning characteristics of the individual. Since heat stress is one of the most common illnesses associated with heavy outdoor work conducted with direct solar load and, in particular, because wearing PPE can increase the risk of developing heat stress, workers must be capable of recognizing the signs and symptoms of heat-related illnesses. Personnel must be aware of the types and causes of heat-related illnesses and be able to recognize the signs and symptoms of these illnesses in both themselves and their co-workers.

Heat rashes are one of the most common problems in hot work environments. Commonly known as prickly heat, a heat rash is manifested as red papules and usually appears in areas where the clothing is restrictive. As sweating increases, these papules give rise to a prickling sensation. Prickly heat occurs in skin that is persistently wetted by unevaporated sweat, and heat rash papules may become infected if they are not treated. In most cases, heat rashes will disappear when the affected individual returns to a cool environment.

Heat cramps are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by sweating. It is important to understand that cramps can be caused both by too much or too little salt.

Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution (plus or minus 0.3% NaCl), excess salt can build up in the body if the water lost through sweating is not replaced. Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments.

Under extreme conditions, such as working for 6 to 8 hours in heavy protective gear, a loss of sodium may occur. Drinking commercially available carbohydrate electrolyte replacement liquids is effective in minimizing physiological disturbances during recovery.

Heat exhaustion occurs from increased stress on various body organs due to inadequate blood circulation, cardiovascular insufficiency, or dehydration. Signs and symptoms include pale, cool, moist skin; heavy sweating; dizziness; nausea; headache, vertigo, weakness, thirst, and giddiness. Fortunately, this condition responds readily to prompt treatment.

Heat exhaustion should not be dismissed lightly, however, for several reasons. One is that the fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended; moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, which is a medical emergency.

Workers suffering from heat exhaustion should be removed from the hot environment, be given fluid replacement, and be encouraged to get adequate rest.

Heat stroke is the most serious form of heat stress. Heat stroke occurs when the body's system of temperature regulation fails and the body's temperature rises to critical levels. This condition is caused by a combination of highly variable factors, and its occurrence is difficult to predict.

Heat stroke is a medical emergency. The primary signs and symptoms of heat stroke are confusion; irrational behavior; loss of consciousness; convulsions; a lack of sweating (usually); hot, dry skin; and an abnormally high body temperature, e.g., a rectal temperature of 41°C (105.8°F). If body temperature is too high, it causes death. The elevated metabolic temperatures caused by a combination of workload and environmental heat load, both of which contribute to heat stroke, are also highly variable and difficult to predict.

If a worker shows signs of possible heat stroke, professional medical treatment should be obtained immediately. The worker should be placed in a shady area and the outer clothing should be removed. The worker's skin should be wetted and air movement around the worker should be increased to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible. The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the timing and effectiveness of first aid treatment.

Regardless of the worker's protestations, no employee suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat stroke or exhaustion, that person may be predisposed to additional heat injuries.

Heat Stress Safety Precautions

Heat stress monitoring and work rest cycle implementation should commence when the ambient adjusted temperature exceeds 72°F. Screening criteria for heat stress exposure are described in Table 4-1 and examples of activities within metabolic rate categories are provided in Table 4-2.

TABLE 4-1
SCREENING CRITERIA FOR HEAT STRESS EXPOSURE
FOR 8 HOUR WORK DAY FIVE DAYS PER WEEK WITH CONVENTIONAL BREAKS

	Acclimatized				**Unacclimatized**			
Work Demands	**Light**	**Moderate**	**Heavy**	**Very Heavy**	**Light**	**Moderate**	**Heavy**	**Very Heavy**
100% Work	85.1ºF (29.5ºC)	81.5ºF (27.5ºC)	78.8ºF (26ºC)		81.5ºF (27.5ºC)	77ºF (25ºC)	72.5F (22.5ºC)	
75% Work; 25% Rest	86.9ºF (30.5ºC)	83.3ºF (28.5ºC)	81.5ºF (27.5ºC)		84.2ºF (29ºC)	79.7ºF (26.5ºC)	76.1ºF (24.5ºC)	
50% Work; 50% Rest	88.7ºF (31.5ºC)	85.1ºF (29.5ºC)	83.3ºF (28.5ºC)	81.5ºF (27.5ºC)	86ºF (30ºC)	82.4ºF (28ºC)	79.7ºF (26.5ºC)	77ºF (25ºC)
25% Work, 75% Rest	90.5ºF (32.5ºC)	87.8ºF (31ºC)	86ºF (30ºC)	85.1ºF (29.5ºC)	87.8ºF (31ºC)	84.2ºF (29ºC)	82.4ºF (28ºC)	79.7ºF (26.5ºC)

Source: 2004 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati: American Conference of Governmental Industrial Hygienists (ACGIH), 2004 - page 171.

TABLE 4-2

EXAMPLES OF ACTIVITIES WITHIN METABOLIC RATE CATEGORIES

Categories	Example Activities
Resting	Sitting quietly
	Sitting with moderate arm movements
Light	Sitting with moderate arm and leg movements
	Standing with light work at machine or bench while using mostly arms
	Using a table saw
	Standing with light or moderate work at machine or bench and some walking about
Moderate	Scrubbing in a standing position
	Walking about with moderate lifting or pushing
	Walking on a level at 6 Km/hr while carrying 3 Kg weight load
Heavy	Carpenter sawing by hand
	Shoveling dry sand
	Heavy assembly work on a noncontinuous basis
	Intermittent heavy lifting with pushing or pulling (e.g., pick-and-shovel work)
Very Heavy	Shoveling wet sand

Source: 2004 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati: American Conference of Governmental Industrial Hygienists (ACGIH), 2004 - page 172

Acclimitization

Acclimatization is a set of physiological adaptations, which allows the body to react to heat stress conditions. Full-heat acclimatization requires up to 3 weeks of continued physical activity under heat-stress conditions similar to those anticipated for the work. Its loss begins when the activity under those heat-stress conditions is discontinued, and a noticeable loss occurs after 4 days. With a recent history of heat stress exposures (e.g., 5 of the last 7 days), a worker can be considered acclimatized for the purpose of using the table Screening Criteria for Heat Stress Exposure.

Additionally, one or more of the following control measures can be used to help control heat stress and are mandatory if any site worker has a heart rate (measure immediately prior to rest period) exceeding 115 beats per minute:

- Site workers will be encouraged to drink plenty of water and electrolyte replacement fluids throughout the day.
- Onsite drinking water will be kept cool (50 to 60°F).
- A work regimen that will provide adequate rest periods for cooling down will be established, as required.
- All personnel will be advised of the dangers and symptoms of heat stroke, heat exhaustion, and heat cramps.
- Cooling devices, such as vortex tubes or cooling vests, should be used when personnel must wear impermeable clothing in conditions of extreme heat.
- Employees should be instructed to monitor themselves and co-workers for signs of heat stress and to take additional breaks as necessary.
- A shaded rest area must be provided. All breaks should take place in the shaded rest area.
- Employees must not be assigned to other tasks during breaks.
- Employees must remove impermeable garments during rest periods. This includes white Tyvek™-type garments.

All employees must be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress disorders.

4.4 Cold Stress

Cold stress normally occurs in temperatures at or below freezing, or under certain circumstances in temperatures of 40°F. Extreme cold for a short time may cause severe injury to exposed body surfaces or result in profound generalized cooling, causing death. Body areas that have high surface area-to-volume ratio, such as fingers, toes, and ears, are the most susceptible. Two factors influence the development of a cold-weather injury: ambient temperature and wind velocity. For instance, a temperature of 10°F with a wind of 15 miles per hour (mph) is equivalent in chilling effect to still air at 18°F. An equivalent chill temperature chart relating the actual dry-bulb temperature and wind velocity is presented in Table 7, below.

Table 7
Chill Temperature Chart

Estimated Wind Speed (in mph)	Actual Temperature Reading (ºF)											
	50	**40**	**30**	**20**	**10**	**0**	**-10**	**-20**	**-30**	**-40**	**-50**	**-60**
	Equivalent Chill Temperature (ºF)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds greater than 40 mph have little additional effect.)	**Little Danger** **Maximum danger of false sense of security.**				**Increasing Danger** **Danger from freezing of exposed flesh within one minute.**			**Great Danger** **Flesh may freeze within 30 seconds.**				
	Trench foot and immersion foot may occur at any point on this chart.											

(This chart was developed by the U.S. Army Research Institute of Environmental Medicine, Natick, MA [Source: ACGIH *TLV Handbook, ACGIH, 2002a*]).

Local injury resulting from cold is included in the generic term “frostbite.” There are several degrees of tissue damage associated with frostbite. Frostbite of the extremities falls into the following categories:

- *Frost Nip or Incipient Frostbite*—Characterized by sudden blanching or whitening of skin.
- *Superficial Frostbite*—Skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.
- *Deep Frostbite*—Tissues are cold, pale, and solid; extremely serious injury.

Systemic hypothermia is caused by exposure to freezing or rapidly dropping temperature. It can be fatal. Its symptoms are usually exhibited in five stages:

1) Shivering;

2) Apathy, listlessness, sleepiness, and (sometimes) rapid cooling of the body to less than 95°F;

3) Unconsciousness, glassy stare, slow pulse, and slow respiratory rate;

4) Freezing of the extremities; and

5) Death.

Trauma sustained in freezing or sub-zero conditions requires special attention because an injured worker is predisposed to secondary cold injury. Special provisions must be made to prevent hypothermia and secondary freezing of damaged tissues in addition to providing for first-aid treatment. To avoid cold stress, site personnel must wear protective clothing appropriate for the level of cold and physical activity. In addition to protective clothing, preventive safe work practices, additional training, and warming regimens may be used to prevent cold stress.

4.4.1 Cold Stress Safety Precautions

The following safety precautions should be followed to prevent cold stress:

- For air temperature of 0°F or less, mittens should be used to protect the hands. For exposed skin, continuous exposure should not be permitted when air speed and temperature results in a wind chill temperature of -25°F.

- At air temperatures of 36°F or less, field personnel who become immersed in water or whose clothing becomes wet must be immediately provided with a change of clothing and be treated for hypothermia.

- If work is done at normal temperature or in a hot environment before entering the cold, the field personnel must confirm that their clothing is not wet as a consequence of sweating. If wet, field personnel must change into dry clothes prior to entering the cold area.

- If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work must be modified or suspended until adequate clothing is made available or until weather conditions improve.

- Field personnel handling evaporative liquid (e.g., gasoline, alcohol, or cleaning fluids) at air temperatures below 40°F must take special precaution to avoid soaking of clothing or gloves with the liquids because of the added danger of cold injury due to evaporative cooling.

4.4.2 Safe Work Practices

The following safe work practices must be employed to prevent cold stress:

- Direct contact between bare skin and cold surfaces (< 20°F) should be avoided. Metal tool handles and/or equipment controls should be covered by thermal insulating material.

- For work performed in a wind chill temperature at or below 10°F, workers should be under constant protective observation (buddy system). The work rate should be established to prevent heavy sweating that will result in wet clothing. For heavy work, rest periods must be taken in heated shelters and workers should be provided with an opportunity to change into dry clothing if needed.

- Field personnel should be provided the opportunity to become accustomed to cold-weather working conditions and required protective clothing.

- Work should be arranged in such a way that sitting or standing still for long periods is minimized.

- During the warming regimen (rest period), field personnel should be encouraged to remove outer clothing to permit sweat evaporation or to change into dry work clothing. Dehydration, or loss of body fluids, occurs insidiously in the cold environment and may increase susceptibility to cold injury due to a significant change in blood flow to the extremities. Fluid replacement with warm, sweet drinks and soups is recommended. The intake of coffee should be limited because of diuretic and circulatory effects.

4.5 Biological Hazards

Biological hazards may include poison ivy, snakes, thorny bushes and trees, ticks, mosquitoes, fire ants, scorpions, and other pests.

4.5.1 Tick Borne Diseases

Lyme Disease – The disease commonly occurs in summer and is transmitted by the bite of infected ticks. "Hot spots" in the United States include New York, New Jersey, Pennsylvania, Massachusetts, Connecticut, Rhode Island, Minnesota, and Wisconsin.

Erlichiosis – The disease also commonly occurs in summer and is transmitted by the bite of infected ticks. "Hot spots" in the United States include New York, Massachusetts, Connecticut, Rhode Island, Minnesota, and Wisconsin.

These diseases are transmitted primarily by the deer tick, which is smaller and redder than the common wood tick. The disease may be transmitted by immature ticks, which are small and hard to see. The tick may be as small as a period on this page.

Symptoms of Lyme disease include a rash or a peculiar red spot, like a bull's eye, which expands outward in a circular manner. The victim may have headache, weakness, fever, a stiff neck, and swelling and pain in the joints, and eventually, arthritis. Symptoms of erlichiosis include muscle and joint aches, flu-like symptoms, but there is typically no skin rash.

Rocky Mountain Spotted Fever (RMSF) – This disease is transmitted via the bite of an infected tick. The tick must be attached 4 to 6 hours before the disease-causing organism (Rickettsia rickettsii) becomes reactivated and can infect humans. The primary symptom of RMSF is the sudden appearance of a moderate-to-high fever. The fever may persist for two to three weeks. The victim may also have a headache, deep muscle pain, and chills. A rash appears on the hands and feet on about the third day and eventually spreads to all parts of the body. For this reason, RMSF may be confused with measles or meningitis. The disease may cause death, if untreated, but if identified and treated promptly, death is uncommon.

Control – Tick repellant containing diethyltoluamide (DEET) should be used when working in tick-infested areas, and pant legs should be tucked into boots. In addition, workers should search the entire body every three or four hours for attached ticks. Ticks should be removed promptly and carefully without crushing, since crushing can squeeze the disease-causing organism into the skin. A gentle and steady pulling action should be used to avoid leaving the head or mouth parts in the skin. Hands should be protected with surgical gloves when removing ticks.

4.5.2 Poisonous Plants

Poisonous plants may be present in the work area. Personnel should be alerted to its presence, and instructed on methods to prevent exposure.

Control – The main control is to avoid contact with the plant, cover arms and hands, and frequently wash potentially exposed skin. Particular attention must be given to avoiding skin contact with objects or protective clothing that have touched the plants. Treat every surface that may have touched the plant as contaminated, and practice contamination avoidance. If skin contact is made, the area should be washed immediately with soap and water, and observed for signs of reddening.

4.5.3 Snakes

The possibility of encountering snakes exists, specifically for personnel working in wooded/vegetated areas. Snake venoms are complex and include proteins, some of which have enzymatic activity. The effects produced by venoms include neurotoxic effects with sensory, motor, cardiac, and respiratory difficulties; cytotoxic effects on red blood cells, blood vessels, heart muscle, kidneys, and lungs; defects in coagulation; and effects from local release of substances by enzymatic actions. Other noticeable effects of venomous snakebites include swelling, edema, and pain around the bite, and the development of ecchymosis (the escape of blood into tissues from ruptured blood vessels).

Control – To minimize the threat of snakebites, all personnel walking through vegetated areas must be aware of the potential for encountering snakes, and the need to avoid actions potentiating encounters, such as turning over logs, etc. If snakebite occurs, an attempt should be made to safely identify the snake via size and markings. The victim must be transported to the nearest hospital within 30 minutes; first aid consists of applying a constriction band, and washing the area around the wound to remove any unabsorbed venom.

4.5.4 Spiders

Personnel may encounter spiders during work activities.

Two spiders are of concern, the black widow and the brown recluse. Both prefer dark sheltered areas such as basements, equipment sheds and enclosures, and around woodpiles or other scattered debris. The black widow is shiny black, approximately one inch long, and found throughout the United States. There is a distinctive red hourglass marking on the underside of the black widows body. The bite of a black widow is seldom fatal to healthy adults, but effects include respiratory distress, nausea, vomiting, and muscle spasms. The brown recluse is smaller than the black widow and gets its name from its brown coloring and behavior. The brown recluse is more prevalent in the southern United States. The brown recluse has a distinctive violin shape on the top of its body. The bite of the brown recluse is painful and the bite site ulcerates and takes many weeks to heal completely.

Control – To minimize the threat of spider bites, all personnel walking through vegetated areas must be aware of the potential for encountering these arachnids. Personnel need to avoid actions that may result in encounters, such as turning over logs, and placing hands in dark places such as behind equipment or in corners of equipment sheds or enclosures. If a spider bite occurs, the victim must be transported to the nearest hospital as soon as possible; first aid consists of applying ice packs and washing the area around the wound to remove any unabsorbed venom.

4.5.5 Mosquitoes

Personnel may be exposed to mosquitoes during work activities.

Typical exposure to mosquitoes does not present a significant hazard. However, if West Nile virus is prevalent in the area exposure to this virus is increased. West Nile virus results in flu-like symptoms and can be serious if not treated or in immune compromised individuals. There have been confirmed cases of West Nile virus in the Northeast.

Control – To minimize the threat of mosquito bites all personnel working outside must be aware of the potential for encountering mosquitoes and implement the basic precautions listed below:

- Avoid working at dawn or dusk when mosquitoes are most active;
- Prevent accumulation of standing water at the work-site;
- Apply an insect repellent that contains DEET to exposed skin and to clothing;
- Wear light colored clothes, preferably with long-sleeves and full-length pants; and
- Do not touch any dead birds or animals that you encounter.

If dead birds are detected near the site, report to the local County Health Department. If flu-like symptoms are present, contact your doctor or the Health and Safety Officer for more information.

4.6 Noise

Exposure to noise over the OSHA action level can cause temporary impairment of hearing; prolonged and repeated exposure can cause permanent damage to hearing. The risk and severity of hearing loss increases with the intensity and duration of exposure to noise. In addition to damaging hearing, noise can impair voice communication, thereby increasing the risk of accidents onsite.

Control – All personnel must wear hearing protection, with a Noise Reduction Rating (NRR) of at least 20, when noise levels exceed 85 dBA. When it is difficult to hear a co-worker at normal conversation distance, the noise level is approaching or exceeding 85 dBA, and hearing protection is necessary. All site personnel who may be exposed to noise must also receive baseline and annual audiograms and training as to the causes and prevention of hearing loss. Noise monitoring is discussed in Section 6.2, Noise Monitoring.

Whenever possible, equipment that does not generate excessive noise levels will be selected for this project. If the use of noisy equipment is unavoidable, barriers or increased distance will be used to minimize worker exposure to noise, if feasible.

4.7 Spill Control

All personnel must take every precaution to minimize the potential for spills during site operations. All onsite personnel shall immediately report any discharge, no matter how small, to the SS.

Spill control equipment and materials will be located on the site at locations that present the potential for discharge. All sorbent materials used for the cleanup of spills will be containerized and labeled appropriately. In the event of a spill, the SS will follow the provisions in Section 9, Emergency Procedures, to contain and control released materials and to prevent their spread to offsite areas.

4.8 Sanitation

Site sanitation will be maintained according to OSHA requirements.

4.8.1 Break Area

Breaks must be taken in the SZ, away from the active work area after site personnel go through decontamination procedures. There will be no smoking, eating, drinking, or chewing gum or tobacco in any area other than the SZ.

4.8.2 Potable Water

The following rules apply to all field operations:

- An adequate supply of potable water will be provided at each project site. Potable water must be kept away from hazardous materials or media, and contaminated clothing or equipment.

- Portable containers used to dispense drinking water must be capable of being tightly closed, and must be equipped with a tap dispenser. Water must not be consumed directly from the container (drinking from the tap is prohibited) nor may it be removed from the container by dipping.

- Containers used for drinking water must be clearly marked and shall not be used for any other purpose.

- Disposable drinking cups must be provided. A sanitary container for dispensing cups and a receptacle for disposing of used cups is required.

Sanitary Facilities

Access to facilities for washing before eating, drinking, or smoking, or alternate methods such as waterless hand-cleaner and paper towels will be provided.

4.8.3 Lavatory

If permanent toilet facilities are not available, an appropriate number of portable chemical toilets will be provided.

This requirement does not apply to mobile crews or to normally unattended site locations so long as employees at these locations have transportation immediately available to nearby toilet facilities.

4.9 Emergency Equipment

Adequate emergency equipment for the activities being conducted onsite and as required by applicable sections of 29 CFR 1910 and 29 CFR 1926 will be onsite prior to the commencement of project activities. Personnel will be provided with access to emergency equipment, including, but not limited to, the following:

- fire extinguishers of adequate size, class, number, and location as required by applicable sections of 29 CFR 1910 and 1926;
- industrial first-aid kits of adequate size for the number of personnel onsite; and
- emergency eyewash and/or shower if required by operations being conducted onsite.

4.10 Lockout/Tagout Procedures

Only fully qualified and trained personnel will perform maintenance procedures. Before maintenance begins, lockout/tagout procedures per OSHA 29 CFR 1910.147 will be followed.

Lockout is the placement of a device that uses a positive means, such as lock, to hold an energy or material-isolating device such that the equipment cannot be operated until the lockout device is removed. If a device cannot be locked out, a tagout system shall be used. Tagout is the placement of a warning tag on an energy or material isolating device indicating that the equipment controls may not be operated until the tag is removed by the personnel who attached the tag. Attachment J presents logout/tagout equipment specific energy control procedures.

4.11 Electrical Safety

Electricity may pose a particular hazard to site workers due to the use of portable electrical equipment. If wiring or other electrical work is needed, a qualified electrician must perform it.

General electrical safety requirements include:

- All electrical wiring and equipment must be a type listed by Underwriters Laboratories (UL), Factory Mutual Engineering Corporation (FM), or other recognized testing or listing agency.

- All installations must comply with the National Electrical Safety Code (NESC), the National Electrical Code (NEC), or USCG regulations.

- Portable and semi-portable tools and equipment must be grounded by a multi-conductor cord having an identified grounding conductor and a multi-contact polarized plug-in receptacle.

- Tools protected by an approved system of double insulation, or its equivalent, need not be grounded. Double insulated tools must be distinctly marked and listed by UL or FM.

- Live parts of wiring or equipment must be guarded to prevent persons or objects from touching them.

- Electric wire or flexible cord passing through work areas must be covered or elevated to protect it from damage by foot traffic, vehicles, sharp corners, projections, or pinching.

- All circuits must be protected from overload.

- Temporary power lines, switchboxes, receptacle boxes, metal cabinets, and enclosures around equipment must be marked to indicate the maximum operating voltage.

- Plugs and receptacles must be kept out of water unless of an approved submersible construction.

- All extension cord outlets must be equipped with ground fault circuit interrupters (GFCI).

- Attachment plugs or other connectors must be equipped with a cord grip and be constructed to endure rough treatment.

- Extension cords or cables must be inspected prior to each use, and replaced if worn or damaged. Cords and cables must not be fastened with staples, hung from nails, or suspended by bare wire.

- Flexible cords must be used only in continuous lengths without splice, with the exception of molded or vulcanized splices made by a qualified electrician.

4.12 Lifting Safety

Using proper lifting techniques may prevent back strain or injury. The fundamentals of proper lifting include:

- Consider the size, shape, and weight of the object to be lifted. A mechanical lifting device or additional persons must be used to lift an object if it cannot be lifted safely alone.

- The hands and the object should be free of dirt or grease that could prevent a firm grip.

- Gloves must be used, and the object inspected for metal slivers, jagged edges, burrs, or rough or slippery surfaces.

- Fingers must be kept away from points that could crush or pinch them, especially when putting an object down.

- Feet must be placed far enough apart for balance. The footing should be solid and the intended pathway should be clear.

- The load should be kept as low as possible, close to the body with the knees bent.

- To lift the load, grip firmly and lift with the legs, keeping the back as straight as possible.
- A worker should not carry a load that he or she cannot see around or over.
- When putting an object down, the stance and position are identical to that for lifting; the legs are bent at the knees, and the back is straight as the object is lowered.

4.13 Traffic Safety

The NJSEG Binghamton Former MGP Site is located adjacent to a public roadway and includes public parking areas where exposure to vehicular traffic is likely. Traffic may also be encountered as vehicles enter and exit the area. To minimize the likelihood of project personnel and activities being affected by traffic, the following procedures will be implemented.

Cones must be placed along the shoulder of the roadway starting 100 feet from the work area to alert passing motorists to the presence of personnel and equipment. A “Slow” or “Men Working” sign must be placed at the first cone. Barricades with flashing lights should be placed between the roadway and the work area.

During activities along a roadway, equipment will be aligned parallel to the roadway to the extent feasible, facing into the oncoming traffic so as to place a barrier between the work crew and the oncoming traffic. All crewmembers must remain behind the equipment and the traffic barrier.

All site personnel who are potentially exposed to vehicular traffic must wear an outer layer of orange warning garments, such as vests, jackets, or shirts. If work is performed in hours of dusk or darkness, workers will be outfitted with reflective garments either orange, white (including silver-coated reflective coatings or elements that reflect white light), yellow, fluorescent red-orange, or fluorescent yellow-orange.

The flow of traffic into and out of the adjacent business must be assessed, and precautions taken to warn motorists of the presence of workers and equipment. Where possible, vehicles should be aligned to provide physical protection of people and equipment.

4.14 Hot Work Procedures

All welding, cutting, and hot work will be completed as per OSHA 29 CFR 1910.251 and site-specific procedures. Only fully qualified and trained personnel will perform hot work procedures. Before hot work begins, the BBL Hot Work Permit or equivalent site-specific form will be completed and approved by the site contact and BBL HSS. The site hot work form can be found in attachment G. Contact the HSO prior to the start of any hot work activities.

5. Personal Protective Equipment

5.1 Levels of Protection

PPE is required to safeguard site personnel from various hazards. Varying levels of protection may be required depending on the levels of COC and the degree of physical hazard. This section presents the various levels of protection and defines the conditions of use for each level. A summary of the levels is presented in Table 5-1 in this section.

5.1.1 Level D Protection

The minimum level of protection that is required of BBL personnel and subcontractors at the site is Level D, which is worn when no dermal exposure hazard exists and site conditions or air monitoring indicates that no inhalation hazard exists. Level D protection includes the following equipment:

- Work clothing as prescribed by weather;
- Steel-toe work boots, meeting ANSI Z41;
- Safety glasses with side shields or goggles, meeting ANSI Z87;
- Hard hat, meeting ANSI Z89, when falling object hazards are present; and
- Hearing protection (if noise levels exceed 85 dBA, then hearing protection with a USEPA NRR of at least 20 dBA must be used).

5.1.2 Modified Level D Protection

Modified Level D will be used when airborne contaminants are not present at levels of concern, but site activities present an increased potential for skin contact with contaminated materials. Modified Level D consists of the following equipment:

- Nitrile outer gloves worn over nitrile surgical gloves;
- Latex or PVC overboots when contact with COC-impacted media is anticipated;
- Steel-toe work boots, meeting ANSI Z41;
- Safety glasses with side shields or goggles, meeting ANSI Z87;
- Face shield in addition to safety glasses or goggles when projectiles or splash hazards exist;
- Tyvek® or KleenGuard®coveralls when skin contact with COC-impacted media is anticipated;
- Hard hat, meeting ANSI Z89, when falling object hazards are present; and

- Hearing protection (if noise levels exceed 85 dBA, then hearing protection with a USEPA NRR of at least 20 dBA must be used).

5.1.3 Level C Protection

Level C protection will be required when the airborne concentration of one or more of the site COCs reaches one-half of the OSHA Permissible Exposure Limit (PEL) or ACGIH TLV. The following equipment will be used for Level C protection:

- Full-face, National Institute for Occupational Safety and Health- (NIOSH-) approved, air-purifying respirator with combination organic vapor cartridges;
- Polyethylene-coated Tyvek® suit with ankles and cuffs taped to boots and gloves;
- Nitrile outer gloves worn over nitrile surgical gloves;
- Steel-toe work boots, meeting ANSI Z41;
- Chemical-resistant boots with steel toes, or latex or PVC overboots over steel-toe boots;
- Hard hat, meeting ANSI Z89; and
- Hearing protection (if noise levels exceed 85 dBA, then hearing protection with a USEPA NRR of at least 20 dBA must be used).

5.2 Selection of PPE

Equipment for personal protection will be selected based on the potential for contact, site conditions, ambient air quality, and the judgment of supervising site personnel and health and safety professionals. The PPE used will be chosen to be effective against the COC present on the site.

5.3 Site Respiratory Protection Program

Respiratory protection is an integral part of employee health and safety at the site due to potentially hazardous concentrations of airborne COC. The site respiratory protection program will consist of the following (as a minimum):

- All on-site personnel who may use respiratory protection will have an assigned respirator.
- All on-site personnel who may use respiratory protection will have been fit tested and trained in the use of a full-face air-purifying respirator within the past 12 months.
- All on-site personnel who may use respiratory protection must within the past year have been medically certified as being capable of wearing a respirator. Documentation of the medical certification must be provided to the HSS, prior to commencement of site work.

- Only cleaned, maintained, NIOSH-approved respirators will be used.

- If respirators are used, the respirator cartridge is to be properly disposed of at the end of each work shift, or when load-up or breakthrough occurs.

- Contact lenses are not to be worn when a respirator is worn.

- All on-site personnel who may use respiratory protection must be clean-shaven. Mustaches and sideburns are permitted, but they must not touch the sealing surface of the respirator.

- Respirators will be inspected, and a negative pressure test performed prior to each use.

- After each use, the respirator will be wiped with a disinfectant, cleansing wipe. When used, the respirator will be thoroughly cleaned at the end of the work shift. The respirator will be stored in a clean plastic bag, away from direct sunlight in a clean, dry location, in a manner that will not distort the face piece.

5.4 Using PPE

Depending upon the level of protection selected, specific donning and doffing procedures may be required. The procedures presented in this section are mandatory if Modified Level D or Level C PPE is used. All personnel entering the EZ must put on the required PPE in accordance with the requirements of this HASP. When leaving the EZ, PPE will be removed in accordance with the procedures listed, to minimize the spread of COC.

5.4.1 Donning Procedures

These procedures are mandatory only if Modified Level D or Level C PPE is used on the site:

- Remove bulky outerwear. Remove street clothes and store in clean location;
- Put on work clothes or coveralls;
- Put on the required chemical protective coveralls;
- Put on the required chemical protective boots or boot covers;
- Tape the legs of the coveralls to the boots with duct tape;
- Put on the required chemical protective gloves;
- Tape the wrists of the protective coveralls to the gloves;
- Don the required respirator and perform appropriate fit check (Level C);
- Put hood or head covering over head and respirator straps and tape hood to facepiece (Level C); and
- Don remaining PPE, such as safety glasses or goggles and hard hat.

When these procedures are instituted, one person must remain outside the work area to ensure that each person entering has the proper protective equipment.

5.4.2 Doffing Procedures

The following procedures are only mandatory if Modified Level D or Level C PPE is required for the site. Whenever a person leaves the work area, the following decontamination sequence will be followed:

- Upon entering the CRZ, rinse contaminated materials from the boots or remove contaminated boot covers;
- Clean reusable protective equipment;
- Remove protective garments, equipment, and respirator (Level C). All disposable clothing should be placed in plastic bags, which are labeled with contaminated waste labels;
- Wash hands, face, and neck (or shower if necessary);
- Proceed to clean area and dress in clean clothing; and
- Clean and disinfect respirator for next use.

All disposable equipment, garments, and PPE must be bagged in plastic bags and labeled for disposal. See Section 7, Decontamination, for detailed information on decontamination stations.

5.5 Selection Matrix

The level of personal protection selected will be based on air monitoring of the work environment and an assessment by the SS and HSS of the potential for skin contact with COC. The PPE selection matrix is presented in Table 5-1. This matrix is based on information available at the time this plan was written. The Airborne Contaminant Action Levels in Table 6-1 should be used to verify that the PPE prescribed in these matrices is appropriate.

TABLE 5-1
PPE SELECTION MATRIX

Task	Level of Protection
Mobilization, Land Survey	Level D
Soil Investigation	Modified Level D/Level C
Groundwater Investigation	Modified Level D/Level C
NAPL monitoring/recovery	Modified Level D/Level C
Soil excavation	Modified Level D/Level C
Onsite observation	Modified Level D/Level C
Equipment Decontamination	Modified Level D
Demobilization	Level D

6. Air Monitoring

6.1 Air Monitoring

Air monitoring will be conducted to evaluate airborne levels of COCs. The monitoring results will dictate work procedures and the selection of PPE for BBL employees and BBL subcontractors. The monitoring devices to be used are an MIE PDR 1000 particulate monitor (or equivalent) and a combination lower explosive limit/oxygen/hydrogen sulfide/carbon monoxide/photoionization detector (PID) with an 10.6 eV lamp. The RAE Systems MultiRae is an example of this type of instrument. Colorimetric detector tubes for Benzene may be needed if organic vapor action levels are met.

Monitoring for organic vapors and particulates will be conducted in the exclusion zone during all ground intrusive activities. Monitoring data will be recorded on the Air Monitoring Form (Attachment E).

6.2 Noise Monitoring

Noise monitoring may be conducted as required. Hearing protection is mandatory for all employees in noise hazardous areas, such as around heavy equipment. As a general rule, sound levels that cause speech interference at normal conversation distance should require the use of hearing protection.

6.3 Monitoring Equipment Maintenance and Calibration

All direct-reading instrumentation calibrations should be conducted under the approximate environmental conditions the instrument will be used. Instruments must be calibrated before and after use, noting the reading(s) and any adjustments that are necessary. All air monitoring equipment calibrations, including the standard used for calibration, must be documented on a calibration log or in the field notebook. All completed HS documentation/forms must be reviewed by the HSS and maintained by the SS.

All air monitoring equipment will be maintained and calibrated in accordance with the specific manufacturer's procedures. Preventive maintenance and repairs will be conducted in accordance with the respective manufacturer's procedures. When applicable, only manufacturer-trained and/or authorized personnel will be allowed to perform instrument repairs or preventive maintenance.

If an instrument is found to be inoperative or suspected of giving erroneous readings, the HSS must be responsible for immediately removing the instrument from service and obtaining a replacement unit. If the instrument is essential for safe operation during a specific activity, that activity must cease until an appropriate replacement unit is obtained. The HSS will be responsible for ensuring a replacement unit is obtained and/or repairs are initiated on the defective equipment.

6.4 Action Levels

Table 6-1 presents airborne contaminant action levels that will be used to determine the procedures and protective equipment necessary based on conditions as measured at the site.

TABLE 6-1
AIRBORNE CONTAMINANT ACTION LEVELS

Parameter	Reading in Breathing Zone (BZ)	Action
Total Organic Vapors[1] Including: Benzene Ethyl Benzene Toluene Xylene Fuel Oil	0 ppm to < 1 ppm > 1 ppm to 5 ppm ≥ 5 ppm to ≤ 50 ppm > 50 ppm	Normal operations; record breathing zone monitoring measurements every hour Increase recording frequency to at least every 15 minutes and use benzene Drager tube to screen for the presence of benzene Upgrade to level C PPE, continue screening for benzene Stop work; evacuate work area, investigate cause of reading, reduce through engineering controls, contact HSO
Benzene (as determined by colorimetric tube)	≥ 1 ppm to 10 ppm >10 ppm	Upgrade to Level C PPE Stop work; evacuate confined spaces/work area, investigate cause of reading; contact HSO
Coal-tar-pitch volatiles (polynuclear aromatic hydrocarbons [PAH])- as measured by total airborne particulate in the work area	0 to 0.200 mg/m^3 > 0.200 mg/m^3 > 2.00 mg/m^3	Normal operations Initiate wetting of work area to control dust; upgrade to Level C if dust control measures do not control dust within 15 minutes, monitor downwind impacts. Stop work; investigate cause of reading; contact PM and HSO
Cyanides: calcium, potassium, and sodium	5 mg/m^3 (skin)	
PCBs (To be addressed by particulate monitoring, see below)		
Total Particulate *Action levels for compliance with NY CAMP – see Section 6.5*	0 to 0.100 mg/m^3 above background > 0.100 mg/m^3 above background > 0.15 mg/m^3 in breathing zone or at downwind perimeter of work area	Normal operations Initiate wetting of work area to control dust; upgrade to Level C if dust control measures do not control dust within 15 minutes, monitor downwind impacts. Stop work; investigate cause of reading; contact PM and HSO
Oxygen	≤ 19.5 % > 19.5% to < 23.5 % ≥ 23.5 %	Stop work; evacuate confined spaces/work area, investigate cause of reading; ventilate area; contact HSO Normal operations Stop work; evacuate confined spaces/work area, investigate cause of reading; ventilate area; contact HSO
Carbon Monoxide	0 ppm to ≤ 20 ppm	Normal operations

Parameter	Reading in Breathing Zone (BZ)	Action
	> 20 ppm	Stop work; evacuate confined spaces/work area, investigate cause of reading; ventilate area; contact HSO
Hydrogen Sulfide	0 ppm to ≤ 5 ppm > 5 ppm	Normal operations Stop work; evacuate confined spaces/work area, investigate cause of reading; ventilate area; contact HSO
Flammable Vapors (LEL)	< 10% LEL ≥ 10% LEL	Normal operations Stop work; ventilate area; investigate source of vapors

[1] **Note:**

If action levels in the worker breathing zone are exceeded for organic vapors or particulates, air monitoring will be required at various onsite/perimeter locations to determine appropriate response activities that are protective of personnel onsite who are not directly involved with the investigation, personnel at adjacent commercial sites, and the surrounding community, as detailed in Section 6.5 of this HASP.

6.5 Onsite Monitoring Plan and Response Activities

Soil borings and test pits will be completed at onsite locations as part of the field investigation activities. These activities have the potential to generate organic vapors and airborne particulates. As mentioned above, air monitoring will be conducted in the worker breathing zone to determine the level of protection required for personnel observing completion of test pits and soil borings. The New York State Community Air Monitoring Program (CAMP) will be implemented under certain circumstances (Attachment L). If action levels in the worker breathing zone are exceeded for organic vapors or particulates, air monitoring will be required at various onsite/perimeter locations to determine appropriate response activities that are protective of personnel onsite who are not directly involved with the investigation, personnel at adjacent commercial sites, and the surrounding community. If action levels for the remaining monitoring parameters listed in Table 6-1 are exceeded, work will stop, the HSO will be contacted, and perimeter monitoring will be performed. Additional monitoring (and appropriate response activities) to be implemented if the total organic vapor and particulate levels in the worker breathing zone exceed action levels as discussed below.

Total Organic Vapors

If the sustained level of total organic vapors in the worker breathing zone exceeds 1 ppm above background, then the level of total organic vapors will be manually recorded at the downwind perimeter of the work area (i.e., exclusion zone) at 15 minute intervals. If the sustained level of total organic vapors at the downwind perimeter of the work area exceeds 1 ppm above background, then work activities will be halted and additional downwind monitoring will be performed. Efforts will be undertaken to mitigate the source of organic vapors. The exclusion zone will be enlarged, if necessary, to mitigate the potential for people who are not involved with the investigation from being exposed to organic vapor levels exceeding 1 ppm above background.

During the investigation, it is possible that the downwind perimeter of the work area will coincide with the site perimeter. If, at any time, the sustained level of total organic vapors adjacent to the downwind site perimeter reaches 5 ppm above background, then the level of total organic vapors adjacent to the nearest downwind occupied building or property from the work zone will be monitored. If after 30 minutes, the total organic vapor level adjacent to the nearest occupied building or property has not subsided below 1 ppm above background, then the HSS will inform the local emergency response contacts listed in Section 9.8, project management, and persons who may be exposed will be notified to evacuate occupied buildings or properties. These persons will not be permitted to return to the properties until after the level of total organic vapors on the properties subsides to below 1 ppm above background.

Particulates

If the level of particulates in the worker breathing zone exceeds 100 $\mu g/m^3$ (0.10 mg/m^3) above background for 1 minute, then the level of particulates will be manually recorded at the downwind perimeter of the work area at 15 minute intervals. If the level of particulates at the downwind perimeter of the work area is 150 $\mu g/m^3$ or greater, then work activities will cease and dust suppression techniques must be employed to maintain particulate levels below 150 $\mu g/m^3$. In addition, the exclusion zone will be enlarged if necessary to keep the public from being exposed to particulate levels greater than 150 $\mu g/m^3$.

6.6 Odor Control

If odor complaints are received from members of the surrounding community and are related to the field investigation activities described herein, then the potentially odor-causing activity will be suspended, subsurface openings will be covered, and onsite personnel, in consultation with the project managers, will evaluate an alternate course of action.

7. Work Zones and Decontamination

7.1 Work Zones

7.1.1 Authorization to Enter

Only personnel with the appropriate training and medical certifications (if respirators are required) will be allowed to work at the project site. The SS will maintain a list of authorized persons; only personnel on the authorized persons list will be allowed to enter the site work areas.

7.1.2 Site Orientation and Hazard Briefing

No person will be allowed in the work area during site operations without first being given a site orientation and hazard briefing. This orientation will be presented by the SS or HSS, and will consist of a review of this HASP. This review must cover the chemical, physical, and biological hazards, protective equipment, safe work procedures, and emergency procedures for the project. Following this initial meeting, daily safety meetings will be held each day before work begins.

All people entering the site work areas, including visitors, must document their attendance at this briefing, as well as the daily safety meetings on the forms included with this plan.

7.1.3 Certification Documents

A training and medical file may be established for the project and kept on site during all site operations. Specialty training, such as first aid/cardiopulmonary resuscitation (CPR) certificates, as well as current medical clearances for all project field personnel required to wear respirators, will be maintained within that file. All BBL and subcontractor personnel must provide their training and medical documentation to the HSS prior to starting work.

7.1.4 Entry Log

A log-in/log-out sheet will be maintained at the site by the SS. Personnel must sign in and out on a log sheet as they enter and leave the work area, and the SS may document entry and exit in the field notebook.

7.1.5 Entry Requirements

In addition to the authorization, hazard briefing, and certification requirements listed above, no person will be allowed in any BBL work area unless they are wearing the minimum PPE as described in Section 5, Personal Protective Equipment.

7.1.6 Emergency Entry and Exit

People who must enter the work area on an emergency basis will be briefed of the hazards by the SS. All activities will cease in the event of an emergency. People exiting the work area because of an emergency will gather in a safe area for a head count. The SS is responsible for ensuring that all people who entered the work area have exited in the event of an emergency.

7.1.7 Contamination Control Zones

Contamination control zones are maintained to prevent the spread of contamination and to prevent unauthorized people from entering hazardous areas.

7.1.7.1 Exclusion Zone

An EZ may consist of a specific work area, or may be the entire area of potential contamination. All employees entering an EZ must use the required PPE, and must have the appropriate training and medical clearance for hazardous waste work. The EZ is the defined area where there is a possible respiratory and/or contact health hazard. Cones, caution tape, or a site diagram will identify the location of each EZ.

7.1.7.2 Contamination Reduction Zone

The CRZ or transition area will be established, if necessary, to perform decontamination of personnel and equipment. All personnel entering or leaving the EZ will pass through this area to prevent any cross-contamination. Tools, equipment, and machinery will be decontaminated in a specific location. The decontamination of all personnel will be performed on site adjacent to the EZ. Personal protective outer garments and respiratory protection will be removed in the CRZ and prepared for cleaning or disposal. This zone is the only appropriate corridor between the EZ and the SZ.

7.1.7.3 Support Zone

The SZ is a clean area outside the CRZ located to prevent employee exposure to hazardous substances. Eating and drinking will be permitted in the support area only after proper decontamination. Smoking may be permitted in the SZ, subject to site requirements.

7.1.8 Posting

Work areas will be prominently marked and delineated using cones, caution tape, or a site diagram.

7.1.9 Site Inspections

The SS will conduct a daily inspection of site activities, equipment, and procedures to verify that the required elements are in place. The Health and Safety Inspection Form in Attachment I may be used as a guide for daily inspections. A monthly SWO must also be completed and forwarded to the PM for review.

7.2 Decontamination

7.2.1 Personnel Decontamination

All personnel wearing Modified Level D or Level C protective equipment in the EZ must undergo personal decontamination prior to entering the SZ. The personnel decontamination area will consist of the following stations at a minimum:

- *Station 1*: Personnel leaving the contaminated zone will remove the gross contamination from their outer clothing and boots.

- *Station 2*: Personnel will remove their outer garment and gloves and dispose of it in properly labeled containers. Personnel will then decontaminate their hard hats, and boots with an aqueous solution of detergent or other appropriate cleaning solution. These items are then hand carried to the next station.

- *Station 3*: Personnel will thoroughly wash their hands and face before leaving the CRZ. Respirators will be sanitized and then placed in a clean plastic bag.

7.2.2 Equipment Decontamination

All vehicles that have entered the EZ will be decontaminated at the decontamination pad prior to leaving the zone. If the level of vehicle contamination is low, decontamination may be limited to rinsing of tires and wheel wells with water. If the vehicle is significantly contaminated, steam cleaning or pressure washing of vehicles and equipment may be required.

7.2.3 Personal Protective Equipment Decontamination

Where and whenever possible, single-use, external protective clothing must be used for work within the EZ or CRZ. This protective clothing must be disposed of in properly labeled containers. Reusable protective clothing will be rinsed at the site with detergent and water. The rinsate will be collected for disposal.

When removed from the CRZ, the respirator will be thoroughly cleaned with soap and water. The respirator face piece, straps, valves, and covers must be thoroughly cleaned at the end of each work shift and ready for use prior to the next shift. Respirator parts may be disinfected with a solution of bleach and water, or by using a spray disinfectant.

8. Training and Medical Surveillance

8.1 Training

8.1.1 General

All onsite project personnel who work in areas where they may be exposed to site contaminants must be trained as required by OSHA Regulation 29 CFR 1910.120 (HAZWOPER). Field employees also must receive a minimum of three days of actual field experience under the direct supervision of a trained, experienced supervisor. Personnel who completed their initial training more than 12 months prior to the start of the project must have completed an eight-hour refresher course within the past 12 months. The SS must have completed an additional eight hours of supervisory training, and must have a current first-aid/CPR certificate.

8.1.2 Basic 40-Hour Course

The following is a list of the topics typically covered in a 40-hour HAZWOPER training course:

- general safety procedures;
- physical hazards (fall protection, noise, heat stress, cold stress);
- names and job descriptions of key personnel responsible for site health and safety;
- safety, health, and other hazards typically present at hazardous waste sites;
- use, application, and limitations of PPE;
- work practices by which employees can minimize risks from hazards;
- safe use of engineering controls and equipment onsite;
- medical surveillance requirements;
- recognition of symptoms and signs which might indicate overexposure to hazards;
- worker right-to-know (Hazard Communication OSHA 1910.1200);
- routes of exposure to contaminants;
- engineering controls and safe work practices;
- components of a health and safety program and a site-specific HASP;
- decontamination practices for personnel and equipment;
- confined-space entry procedures; and
- general emergency response procedures.

8.1.3 Supervisor Course

Management and supervisors must receive an additional eight hours of training, which typically includes:

- general site safety and health procedures;
- PPE programs; and
- air monitoring techniques.

8.1.4 Site-Specific Training

Site-specific training will be accomplished by onsite personnel reading this HASP, or through a thorough site briefing by the PM, SS, or HSS on the contents of this HASP before work begins. The review must include a discussion of the chemical, physical, and biological hazards; the protective equipment and safety procedures; and emergency procedures.

8.1.5 Daily Safety Meetings

Daily safety meetings will be held to cover the work to be accomplished, the hazards anticipated, the PPE and procedures required to minimize site hazards, and emergency procedures. The SS or HSS should present these meetings prior to beginning the day's fieldwork. No work will be performed in an EZ before the daily safety meeting has been held. The daily safety meeting must also be held prior to new tasks, and repeated if new hazards are encountered. The Daily Safety Meeting Log is included in Attachment B.

8.1.6 First Aid and CPR

At least one employee current in first aid/CPR will be assigned to the work crew and will be on the site during operations. Refresher training in first aid (triennially) and CPR (annually) is required to keep the certificate current. These individuals must also receive training regarding the precautions and protective equipment necessary to protect against exposure to blood-borne pathogens.

8.2 Medical Surveillance

8.2.1 Medical Examination

All personnel who are potentially exposed to site contaminants must participate in a medical surveillance program as defined by OSHA at 29 CFR 1910.120 (f).

8.2.2 Pre-placement Medical Examination

All potentially exposed personnel must have completed a comprehensive medical examination prior to assignment, and periodically thereafter as defined by applicable regulations. The pre-placement and periodic medical examinations typically include the following elements:

- medical and occupational history questionnaire;
- physical examination;
- complete blood count, with differential;
- liver enzyme profile;
- chest X-ray, at a frequency determined by the physician;
- pulmonary function test;
- audiogram;
- electrocardiogram for persons older than 45 years of age, or if indicated during the physical examination;
- drug and alcohol screening, as required by job assignment;

- visual acuity; and
- follow-up examinations, at the discretion of the examining physician or the corporate medical director.

The examining physician provides the employee with a letter summarizing his findings and recommendations, confirming the worker's fitness for work and ability to wear a respirator. Documentation of medical clearance will be available for each employee during all project site work.

Subcontractors will certify that all their employees have successfully completed a physical examination by a qualified physician. The physical examinations must meet the requirements of 29 CFR 1910.120 and 29 CFR 1910.134. Subcontractors will supply copies of the medical examination certificate for each onsite employee.

8.2.3 Other Medical Examinations

In addition to pre-employment, annual, and exit physicals, personnel may be examined:

- at employee request after known or suspected exposure to toxic or hazardous materials; and
- at the discretion of the HSS, HSO, or occupational physician in anticipation of, or after known or suspected exposure to toxic or hazardous materials.

8.2.4 Periodic Exam

Following the placement examination, all employees must undergo a periodic examination, similar in scope to the placement examination. For employees potentially exposed over 30 days per year, the frequency of periodic examinations will be annual. For employees potentially exposed less than 30 days per year, the frequency for periodic examinations will be 24 months.

8.2.5 Medical Restriction

When the examining physician identifies a need to restrict work activity, the employee's supervisor must communicate the restriction to the employee and the HSS. The terms of the restriction will be discussed with the employee and the supervisor.

9. Emergency Procedures

9.1 General

Prior to the start of operations, the work area will be evaluated for the potential for fire, contaminant release, or other catastrophic event. Unusual conditions or events, activities, chemicals, and conditions will be reported to the SS/HSS immediately.

The SS/HSS will establish evacuation routes and assembly areas for the site. All personnel entering the site will be informed of this route and the assembly area.

9.2 Emergency Response

If an incident occurs, the SS or HS should take the following steps:

- Evaluate the incident and assess the need for assistance and/or evacuation;
- Call for outside assistance as needed;
- Confirm that the PM is notified promptly of the incident; and
- Take appropriate measures to stabilize the incident scene.

9.3 Fire

In the case of a fire on site, the SS/HSS will assess the situation and direct firefighting activities. The SS/HSS will confirm that the PM is immediately notified of any fires. Site personnel will attempt to extinguish the fire with available extinguishers, if safe to do so. In the event of a fire that site personnel are unable to safely extinguish with one fire extinguisher, the local fire department will be summoned.

9.4 Contaminant Release

In the event of a contaminant release, the following steps will be taken:

- Notify SS/HSS immediately;
- Evacuate immediate area of release;
- Conduct air monitoring to determine needed level of PPE; and
- Don required level of PPE and prepare to implement control procedures.

The SS/HSS has the authority to commit resources as needed to contain and control released material, and to prevent its spread to off-site areas.

9.5 Medical Emergency

All employee injuries must be promptly reported to the HSS/SS, who will:

- Confirm that the injured employee receives prompt first aid and medical attention.
- In emergency situations, the worker is to be transported by appropriate means to the nearest urgent care facility (normally a hospital emergency room).
- If the injured person is a BBL employee, notify BBL Human Resources at 315-446-9120, ext. 336 as soon as possible after the employee has been safely evacuated from the site.

9.6 Emergency Care Steps

Upon entering an accident area, site personnel must follow these emergency care steps:

- Survey the scene. Determine if it is safe to proceed. Try to determine if the conditions that caused the incident are still a threat. Protect yourself from exposure before attempting to rescue the victim.
- Do a primary survey of the victim. Check for airway obstruction, breathing, and pulse. Assess likely routes of chemical exposure by examining the eyes, mouth, nose, and skin of the victim for symptoms.
- Phone emergency medical services (EMS). Give the location, telephone number used, caller's name, what happened, number of victims, victim's condition, and help being given.
- Maintain airway and perform rescue breathing as necessary.
- Perform CPR as necessary.
- Do a secondary survey of the victim. Check vital signs and do a head-to-toe exam.
- Treat other conditions as necessary. If the victim can be moved, take him or her to a location away from the work area where EMS can gain access.

9.7 First Aid—General

All persons must report any injury or illness to their immediate supervisor or the SS. Trained personnel will provide first aid. Injuries and illnesses requiring medical treatment must be documented. The SS and HSS must conduct an II as soon as emergency conditions no longer exist, and first aid and/or medical treatment has been confirmed. IIs must be completed and submitted to the PM within 24 hours after the incident.

If first-aid treatment is required, first-aid kits are kept at the CRZ. If treatment beyond first aid is required, the injured person(s) should be transported to the medical facility. If the injured person is not ambulatory or shows any sign of not being in a comfortable and stable condition for transport, then an ambulance and/or paramedics should be summoned. If there is any doubt as to the injured worker's condition, it is best to let the local paramedic or ambulance service examine and transport the worker.

9.7.1 First Aid—Inhalation

Any employee complaining of symptoms of chemical overexposure as described in Section 4, General Safety Practices, will be removed from the work area and transported to the designated medical facility for examination and treatment.

9.7.2 First Aid—Ingestion

Call EMS and consult a poison control center for advice. If available, refer to the MSDS for treatment information. If the victim is unconscious, keep them on their side and clear the airway if vomiting occurs.

9.7.3 First Aid—Skin Contact

Project personnel who have had skin contact with contaminants will, unless the contact is severe, proceed through the CRZ to the wash area. Personnel will remove any contaminated clothing and then flush the affected area with water for at least 15 minutes. The worker should be transported to the medical facility if he or she shows any sign of skin reddening, irritation, or if he or she requests a medical examination.

9.7.4 First Aid—Eye Contact

Project personnel who have had contaminants splashed in their eyes, or who have experienced eye irritation while in the EZ, must immediately proceed to the eyewash station in the CRZ. Do not decontaminate prior to using the eyewash. Remove whatever protective clothing is necessary to use the eyewash. Flush the eye with clean running water for at least 15 minutes. Arrange prompt transport to the designated medical facility.

9.7.5 Reporting Injuries, Illnesses, and Near-Miss Incidents

Injuries and illnesses, however minor, will be reported to the SS immediately. The SS will notify BBL and NYSEG project management immediately upon learning of a near-miss, injury or illness. The SS will complete an injury report and submit it to the HSO and the PM within 24 hours.

Near-miss incidents are situations in which no injury or property damage occurred, but under slightly different circumstances an injury or property damage could have occurred. Near misses are caused by the same factors as injuries; therefore, they must be reported and investigated in the same manner. An investigation must be done immediately after an injury, illness, near miss, or other incident to determine if it is safe to proceed with the work.

9.8 Emergency Information

The means to summon local public response agencies such as police, fire, and ambulance will be reviewed in the daily safety meeting. These agencies are identified in Table 9-1.

TABLE 9-1
EMERGENCY CONTACTS

Agency/Name	Telephone No.
Binghamton Police	**911** (607) 723-5321
NY State Police	(607) 778-1911
Fire	**911** (607) 723-7475
Ambulance	**911**
Binghamton General Hospital	(607)-762-2231 Emergency (607) 762-2200 Non-Emergency
BBL Project Manager: John C. Brussel, P.E.	(315) 446-2570, ext. 441
BBL Emergency Contact: Tracy Blazicek, CHMM	(607) 762-8839
BBL Site Supervisor: David A. Cornell	(315) 446-2570, ext. 379
NYSEG Project Manager: James A. Malcolm, P.E.	(518) 402-9669

DIRECTIONS TO THE HOSPITAL

See the following page for directions and a map to the Binghamton General Hospital, 10 Mitchell Ave., Binghamton, NY

It is the responsibility of the HSS to verify the hospital directions prior to the start of work.

BINGHAMTON GENERAL HOSPITAL
10 Mitchell Ave.
Binghamton, NY

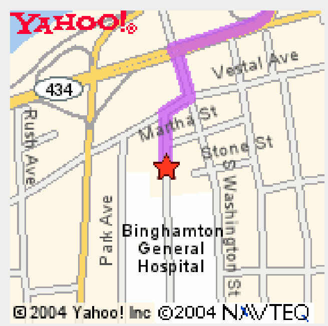
Your Directions

1.	Start at **WASHINGTON ST, BINGHAMTON** - go **0.1** mi
2.	Turn R on **SUSQUEHANNA ST** - go **0.1** mi
3.	Turn R on **RT-434 WEST** - go **0.4** mi
4.	Turn L on **S WASHINGTON ST** - go **0.1** mi
5.	Turn R on **VESTAL AVE** - go **< 0.1** mi
6.	Turn L on **MITCHELL AVE** - go **0.1** mi
7.	Arrive at **10 MITCHELL AVE, BINGHAMTON,** on the R

When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Your Full Route

Your Destination



Address:
10 Mitchell Ave
Binghamton, NY 13903-1617

10. Acronyms and Abbreviations

The following acronyms and abbreviations (listed alphabetically) are applicable to this HASP:

ACGIH	American Conference of Governmental Industrial Hygienists
BBL	Blasland, Bouck & Lee, Inc.
CAMP	Community Air Monitoring Program
CFR	Code of Federal Regulations
COC(s)	Constituent(s) of Concern
CPR	Cardiopulmonary Resuscitation
CRZ	Contamination-Reduction Zone
DEET	diethyltoluamide
DOT	Department of Transportation
EMS	Emergency Medical Services
EZ	Exclusion Zone
FID	Flame Ionization Detector
FM	Factory Mutual Engineering Corporation
GFCI	Ground-Fault-Circuit Interrupter
HASP	Health and Safety Plan
HSO	Health and Safety Officer
HSS	Health and Safety Supervisor
II	Incident Investigation
JSA	Job Safety Analysis
kV	Kilovolts
LEL	Lower Explosive Limit
LFL	Lower Flammable Limit
LPO	Loss Prevention Observation
mph	Miles Per Hour
MSDS	Material Safety Data Sheet
NEC	National Electrical Code
NESC	National Electrical Safety Code
NIOSH	National Institute for Occupational Safety and Health
NRR	Noise Reduction Rating
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PM	Project Manager
PO	Project Officer
PPE	Personal Protective Equipment

RMSF	Rocky Mountain Spotted Fever
SPSA	Safe Performance Self Assessment
SS	Site Supervisor
SWO	Safe Work Observation
SZ	Support Zone
Ta adj	Adjusted Air Temperature
TLV	Threshold Limit Value
UFPO	Underground Facility Protection Organization
UL	Underwriters Laboratory
USEPA	United States Environmental Protection Agency

Attachment A

Task Specific Job Safety Analysis Forms

Job Safety Analysis

JSA Type: ☒ Env Operations ☐ Transport ☐Office ☐ Construction		X New Revised		Date: 8/04
Co: BBLES	Dept:	Div: 61	Org Unit:	Loc:
Work Type: Environmental		Work Activity: Field Sampling		

Personal Protective Equipment (PPE):

Minimum PPE is Level D including: safety glasses or goggles, hard hat, steel-toed and shank boots, hearing protection, and gloves (type dependent on job-specific requirements – nitrile glove required for contact with contaminated soil or water)

Additional PPE may be required in the Health & Safety Plan (HSP). Also refer to the HSP for required traffic control, air monitoring, and emergency procedures.

Development Team	Position/Title	Reviewed By	Position/Title	Date

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each work day. Safe Performance Self Assessment (SPSA) procedures must be used during field activities. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Clear drilling locations.	Traffic hazards, overhead and underground installations, product releases, property damage, dealer inconvenience	Reference Borehole Clearance Review form and coordinate with Station Manger (or designee) to minimize potential conflicts. Review proposed locations against available construction drawings and known utilities, tanks, product lines, etc. Mark out the proposed borehole locations. Call underground utility locating service for public line location clearance and get list of utilities being contacted. If necessary, coordinate private line locator for private property.
Working outdoors	Environmental hazards: sun, heat, cold, insects, hazardous plants	Avoid work in extreme weather conditions, stop work if extreme weather is imminent, inspect area for hazardous plants & insects. Wear appropriate clothes for the area: long sleeves and gloves in overgrown areas, use sunscreen and hat. Monitor for heat and cold stress.
Mobilize with proper equipment/supplies for drilling, geoprobe or sample collection.	Vehicle accident. Lifting hazards. Delay or improper performance of work due to improper equipment onsite.	Follow safe driving procedures; obey traffic laws and signs, maintain safe distance, inspect vehicle prior to driving. Use proper lifting techniques – lift with the legs, avoid twisting and jerky movements. Verify that subcontractors are aware of their responsibilities for labor, equipment and supplies. Review HSP and permit conditions, and gather necessary PPE.
Visually clear proposed drilling locations.	Underground and overhead installations.	Complete Pre-Mobilization section of Borehole Clearance Review form and adjust drilling locations as necessary.
Set up necessary traffic control.	Struck by vehicle during placement. Vehicle accident as a result of improper traffic control equipment placement.	Use buddy system for placing traffic control, place cones around area, park vehicles to block traffic, check for specific requirements based on permits. Wear vest.
Assist with set up of rig.	Vehicle accident during rig movement. Damage caused by rig while accessing set-up location. Contact with overhead installations. Soft terrain. Rig movement.	Verify clear pathway to drilling location and clearance for raising mast. Provide as-needed hand signals and guidance to driver to place rig. Visually inspect rig (fire extinguisher on board, no oil or other fluid leaks, cabling and associated equipment in good condition, pressurized hoses secured with whip-checks or adequate substitute, jacks in good condition?). If necessary, use wooden blocks under jacks to spread load. Chock wheels.
Set up exclusion zone(s) and work stations (drilling and logging/sample collection).	Struck by vehicle during set up. Slip/fall hazards.	Implement exclusion zone set-up instructions of HSP. Set up work stations with clear walking paths to and from rig. Place containment materials and decon equipment.
Clear upper five feet of direct push	Back strain, exposure to chemical hazards,	Don required PPE and initiate air quality monitoring in

location using post-hole digger or bucket auger.	hitting an underground utility, repetitive motion.	accordance with the HSP. Use proper lifting techniques and tools. Complete the Pre-Drilling section of the Borehole Clearance Review form.
Commence direct-push drilling.	Cross-contamination from previous hole. back strain, heat or cold, eye injury, noise, exposure to chemical hazards, hitting an underground utility, trip and fall, equipment failure	Decontaminate sampling after collecting a sample and decontaminate drilling equipment after each borehole. Use proper lifting techniques. Use PPE and monitoring in accordance with HSP (especially note ear protection). Monitor drilling progress. Keep work area clear of tripping or slipping hazards. Perform periodic visual inspections of drill rig.
Collect samples in accordance with sampling plan.	Cross-contamination, improper labeling or storage, exposure to site contaminants.	Decontaminate sampling equipment between each sampling run. Use soil core cutting tool. Label samples in accordance with sampling plan. Keep samples stored in proper containers, at correct temperature, and away from work area. Perform air monitoring and wear proper PPE.
Store cuttings (if any) properly in accordance with site-specific requirements.	Exposure to public. Traffic hazard or obstruction/inconvenience to station operation. Improper storage or disposal.	Have proper storage containment and labeling available onsite. Place materials in isolated location away from traffic and other site functions. Coordinate proper disposal offsite (where applicable).
Backfill borehole.	Improper grouting can lead to future vertical conduit for contaminant migration. Back strain, trip hazards, eye injury from splashing or release of pressurized grout. Unauthorized backfilling causes extra work.	Mix grout to specification (avoid dust generation, use gloves) and completely fill the hole. Use proper lifting techniques and wear proper PPE. Keep work area clear of tripping hazards. Verify presence or other authorization by required inspectors for grouting.
Dispose or store purge water (if any) onsite.	Back strain. Exposure to contaminants. If disposing through onsite treatment system, damage or injury from improper use of equipment. Improper storage or disposal.	Use proper equipment to transport water (pumps, drum dollies, etc.). Wear PPE in accordance with HSP. Review instructions for use of onsite treatment systems. Label storage containers properly, and locate in isolated area away from traffic and other site functions. Coordinate offsite disposal (where applicable).
Clean site/demobilize.	Traffic. Safety hazard left on site. Lifting hazards.	Use buddy system as necessary to remove traffic control. Leave site clean of refuse and debris. Clearly mark/barricade any borings that need later topping off or curing. Notify station personnel of departure, final well locations and any cuttings/purge water left onsite. Use proper lifting techniques
Package and deliver samples to lab.	Bottle breakage, back strain.	Handle and pack bottles carefully (bubble wrap bags are helpful). Avoid contact with tape cutter, or cut away from the hand and body if using knife. Use proper lifting techniques, limit weight of each cooler.

Job Safety Analysis

JSA Type: ☒ Env Operations ☐ Transport ☐Office ☐ Construction	X New Revised	Date: 8/04

Co: BBL Dept: Div: 61 Org Unit: Loc:

Work Type: Environmental | Work Activity: Soil Boring/Monitoring Well Installation

Personal Protective Equipment (PPE):

Minimum PPE is Level D including: safety glasses or goggles, hard hat, steel-toed and shank boots, hearing protection, and gloves (type dependent on job-specific requirements – nitrile gloves must be used during potential contact with contaminated water or COCs)

Additional PPE may be required in the Health & Safety Plan (HSP). Also refer to the HSP for required traffic control, air monitoring, and emergency procedures.

Development Team	Position/Title	Reviewed By	Position/Title	Date
Greg Ertel	Health and Safety			

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each work day. Safe Performance Self Assessment (SPSA) procedures must be used during field activities. Also consider weather conditions (heat, cold, rain, lightning).

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
Clear drilling locations.	Traffic hazards, overhead and underground installations, product releases, property damage, dealer inconvenience	Reference BBL Underground Utility Checklist and client specific requirements to minimize potential conflicts. Review proposed locations against available construction drawings and known utilities, tanks, product lines, etc. Mark out the proposed borehole locations. Call underground utility locating service for public line location clearance, and get list of utilities being contacted. If necessary, coordinate private line locator for private property.
Working outdoors	Environmental hazards: sun, heat, cold, insects, hazardous plants	Avoid work in extreme weather conditions, stop work if extreme weather is imminent, inspect area for hazardous plants & insects. Wear appropriate clothes for the area: long sleeves and gloves in overgrown areas, use sunscreen and hat. Monitor for heat and cold stress.
Mobilize with proper equipment/supplies for drilling.	Vehicle accident. Lifting hazards. Delay or improper performance of work due to improper equipment onsite.	Follow safe driving procedures; obey traffic laws and signs, maintain safe distance, inspect vehicle prior to driving. Use proper lifting techniques – lift with the legs, use two-person lift for greater than 50 lbs, avoid twisting and jerky movements. Verify that subcontractors are aware of their responsibilities for labor, equipment and supplies. Review HASP and permit conditions, and gather necessary PPE.
Visually clear proposed drilling locations.	Underground and overhead utilities/obstructions.	Complete Underground Utility Checklist and adjust drilling locations as necessary.
Set up necessary traffic control.	Struck by vehicle during placement. Vehicle accident as a result of improper traffic control equipment placement.	Use buddy system for placing traffic control, place cones around area, park vehicles to block traffic, check for specific requirements based on permits. Wear high visibility vest.
Assist with set up of drill rig.	Vehicle accident during rig movement. Damage caused by drill rig while accessing set-up location. Overhead utilities and structures. Soft terrain. Rig movement.	Verify clear pathway to drilling location and clearance for raising mast. Provide as-needed hand signals and guidance to driver to place rig. Visually inspect rig (fire extinguisher on board, no oil or other fluid leaks, cabling and associated equipment in good condition, pressurized hoses secured with whip-checks or adequate substitute, jacks in good condition). Verify Emergency Stop switch is accessible and functions. If necessary, use wooden blocks under jacks to spread load. Chock wheels.

Set up exclusion zone(s) and work stations (drilling and logging/sample collection).	Struck by vehicle. Slip/fall hazards.	Implement exclusion zone set-up instructions of HSP. Set up work stations with clear walking paths to and from rig. Place containment materials and decon equipment.
Clear upper five feet of borehole using post-hole digger or bucket auger.	Back strain, exposure to chemical hazards, hitting an underground utility, repetitive motion.	Don any additional PPE and initiate air quality monitoring in accordance with the HSP. Use proper lifting techniques and tools. Complete the Underground Utility Checklist.
Commence drilling borehole.	Cross-contamination from previous hole. back strain, heat or cold, eye injury, exposure to chemical hazards, hitting an underground utility, trip and fall, equipment failure, lifting hazards, overhead hazards.	Decontaminate sampling equipment after collecting a sample and decontaminate drilling auger/rods after drilling a borehole. Use proper lifting techniques. Use PPE and monitoring in accordance with HSP. Monitor drilling progress. Keep work area clear of tripping or slipping hazards. Perform periodic visual inspections of drill rig.
Collect samples in accordance with sampling plan.	Cross-contamination, improper labeling or storage, exposure to site contaminants.	Decontaminate sampling equipment between each sampling run. Label samples in accordance with sampling plan. Keep samples stored in proper containers, at correct temperature, and away from work area. Perform air monitoring and wear proper PPE.
Store cuttings properly in accordance with site-specific requirements.	Exposure to public. Traffic hazard or obstruction/inconvenience to station operation. Improper storage or disposal.	Have proper storage containment and labeling available onsite. Place materials in isolated location away from traffic and other site functions. Coordinate proper disposal offsite (where applicable).
Construct well.	Back strain, eye injury, trip hazard. Cross-contamination. Non-approved well construction.	Use proper lifting techniques and PPE. Keep pathways from well supplies to borehole clear of tripping hazards. Make sure casing and other materials are clean before going into borehole. Verify presence or other authorization by any required inspectors for well installation/grouting.
Cut pavement to set well vault.	Moving blade, eye hazards, exhaust from motor, noise, back strain. Traffic hazards.	Wear proper PPE. Employ proper lifting techniques or mechanical assistance. Keep work area clear of debris. Maintain traffic control and face oncoming traffic.
Install well vault and set in concrete.	Back strain, eye injury, skin exposure to concrete, particulate inhalation, trip hazard. Traffic hazards.	Use proper lifting technique and equipment to install well vault and in concrete preparation. Wear proper PPE . Complete well vault smooth to grade to eliminate trip hazard (if slightly elevated to prevent storm water intrusion, slope concrete skirt gradually). Maintain traffic control and face oncoming traffic.
Develop well	Physical injury from mechanical failure or drill rig or air compressor. Trip hazard. Exposure to contaminants. Cross-contamination. Electric shock.	Make sure equipment is in good working order and pressurized hoses are whip-checked. Wear PPE in accordance with HSP. Keep work area orderly. Decontaminate all equipment going into well. Generators must be equipped with GFCI circuit.
Dispose or store purge water (if any) onsite	Back strain. Exposure to contaminants. If disposing through onsite treatment system, damage or injury from improper use of equipment. Improper storage or disposal.	Use proper equipment to transport water (pumps, drum dollies, etc.). Wear PPE in accordance with HSP. Review any instructions for use of onsite treatment systems. Label storage containers properly and locate in isolated area away from traffic and other site functions. Coordinate offsite disposal (where applicable).
Clean site/demobilize	Traffic. Safety hazard left on site. Lifting hazard.	Use buddy system as necessary to remove traffic control. Leave site clean of refuse and debris. Clearly mark/barricade any well heads that need later work or concrete curing. Notify station personnel of departure, Map well locations, site structures, and location of drilling wastes. Use proper lifting techniques.
Package and deliver samples to lab.	Bottle breakage, back strain.	Handle and pack bottles carefully (bubble wrap bags are helpful). Avoid contact with tape cutter, or cut away from the hand and body if using knife. Use proper lifting techniques, limit weight of each cooler.

Job Safety Analysis

BBL

JSA Type: ☒ Env Operations ☐ Transport ☐Office ☐ Construction	X New Revised	Date: 10/04

Co: Dept: Div: Org Unit: Loc:

Work Type: Environmental	Work Activity: Driving

Personal Protective Equipment (PPE):

Minimum PPE is Level D including: safety glasses or goggles, hard hat, steel-toed and shank boots, hearing protection, and gloves (type dependent on job-specific requirements)

Additional PPE may be required in the Health & Safety Plan (HSP). Also refer to the HSP for required traffic control, air monitoring, and emergency procedures.

Development Team	Position/Title	Reviewed By	Position/Title	Date

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). A tailgate safety meeting must be performed and documented at the beginning of each work day. Safe Performance Self Assessment (SPSA) procedures must be used throughout the project. Weather conditions (heat, cold, rain, lightning) must also be considered.

❶ Job Steps	❷ Potential Hazard	❸ Critical Actions
PRE-TRIP Review SPSA Card. Check weather conditions prior to start of trip	Consider worse case outcomes of vehicle operations. (blowout, collision, injury or death) Inclement weather; snow, ice, rain, fog, severe weather, high winds significantly increase accident risk	Assess the potential hazards. Analyze how to reduce the risk. Act to ensure safe operation of the vehicle. Evaluate weather conditions prior to start of trip and during trip. Consider cancellation or postponement of trip if severe weather is imminent when appropriate. Review map and route prior to starting trip.
Perform perimeter walk around of vehicle to inspect for damage or unusual conditions.	Flat tire, leaking fluids, impaired vision, collision, injury or death.	Assure tires are properly inflated and there is sufficient tread. Assure there are no cuts or bulges in the sidewalls. Assure windshield and window glass is clean. Lift wiper arms and check wiper blades for damage or deterioration. Check behind vehicle for obstructions.
Check and adjust seat and mirrors, check turn signals and windshield wipers/washers. Check lights, headlights and tail-lights for correct operation.	Back or body strain. Blind spots. Inability to signal intentions. Streaked windshield, impaired vision. Insufficient light for night driving or adverse conditions, inability to signal stop.	Adjust seat so back is fully supported, upper arms close to body, pedals within easy reach. Lower steering wheel so hands are below shoulders and shoulders are relaxed. Check mirror adjustments each time vehicle is re-started. Test operation of turn signals. Locate and test operation of windshield wiper and washer. Locate switch and test headlights and tail-lights for operation.
Fasten seat belts	Increased risk of mores serious injury of death in collision.	Assure seat belt is in good condition, works correctly and fastened. Assure all passenger seat belts are in good working condition and fastened.
Lock doors.	Ejection from vehicle. Unwanted intrusion.	Lock all doors to vehicle.
Start engine	Unexpected movement	Assure transmission is in Park and that emergency brake is set.

Check gauges and warning lights	Overheated engine or breakdown due to lack of critical fluids. Brake failure.	Assure there is sufficient gas/diesel, oil, and other critical fluids. If brake light is on do not drive vehicle until condition is thoroughly analyzed and fixed.
Pull out of parking space.	Collision with other vehicles, pedestrians, or stationary objects	Check mirrors and over the shoulder in all directions prior to pulling out of parking space.
DURING TRIP - Keep eyes moving	Collision, injury or death to occupants or other parties.	Move eyes at least every 2 seconds. Scan major and minor intersections before entry (left-right-left). Check mirrors when slowing or stopping vehicle. Scan mirrors frequently, at least one mirror every 5-8 seconds. Avoid staring while evaluating road conditions.
Aim high in steering	Collision, injury or death to occupants or other parties.	Maintain 15 second eye lead time (1 1/2 blocks in city traffic or 1/4 mile in highway traffic). Assess information from distant objects. Adjust eye lead distance to speed.
Leave yourself an out	Collision, injury or death to occupants or other parties.	Maintain safety cushion around vehicle (front, sides, rear). Adjust vehicle space and speed to avoid unsafe intrusion by other drivers. At signal controlled intersections, stop 10 feet behind crosswalks or behind other vehicles. At stop sign controlled intersections, approach stop sign cautiously. Stop at or just behind limit line or crosswalk. When stopped, allow vehicle in front to move for 2 seconds before accelerating. Observe approaching merge areas and choose lane of least resistance. Cede right of way and allow other vehicles to merge, change lanes, make turns, etc.
Get the big picture Adjust speed for weather and road conditions.	Collision, injury or death to occupants or other parties. Excessive speed for conditions can cause loss of control and injury or death to occupants. Hazard to other drivers by loss of control. Distracted driving; use of cell phone, eating drinking, adjusting radio.	Avoid being unnecessarily boxed in. Avoid sudden acceleration and deceleration. Maintain a minimum 4 seconds following distance, adjust speed to traffic conditions, scan immediate and adjacent lanes before merging. Maintain safe speed for weather and road conditions. Adjust following distances when wet or icy conditions exist. Do not use cell phone when driving, pull to side of road before answering, avoid eating or drinking while driving, limit adjustments of seats, mirrors, or radio and keep eyes and attention focused on the road and driving the vehicle.
Make sure they see you.	Collision, injury or death to occupants or other parties..	Seek eye contact with other drivers. Cover or use horn when conditions warrant. Before changing lanes, signal well in advance, check mirrors and over shoulder, and allow adequate space before changing lanes. Break early to activate brake lights. Stay out of blind spots. gently sound horn or flash lights if unsure other driver sees you.
Backing up	Collision, injury or death to occupants or other parties..	Make all backing maneuvers slowly and cautiously. When parking, look for pull through parking to avoid backing.
Parking	Collision, injury or death to occupants or other parties..	Park away from other cars. back into parking spot when possible and safe. Maintain cushion of safety from fixed objects. Set parking brake.

Attachment B

Daily Safety Meeting Log

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

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Safety Meeting Log

Project:	**Location:**
Date / Time:	**Activity:**

1. Work Summary

2. Physical Chemical Hazards

3. Protective Equipment/Procedures

4. Emergency Procedures

Does anyone have any medical issues that the rest of us should know about? (For example: allergic to bees or ants and requires an autoinjector) (DON'T WRITE ANYTHING HERE)

Location of emergency medical equipment, fire extinguishers, etc.

5. Signatures of Attendees

Attachment C

Loss Prevention Observation Form

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BLASLAND, BOUCK & LEE, INC. engineers & scientists	**Loss Prevention Observation (LPO) Form**	
Observer Name:	**Observer Title:**	**Contractor Company Name:**

Date: ______________ **Time:** ____ ☐ **AM** ☐ **PM**	**Project Type / Task Observed:**

Background Information and Miscellaneous Comments

Observer's Positive Comments

Feedback Conducted By		**Date**		**Time**	☐ **AM** ☐ **PM**

Conclusion (Describe in Detail Why the Questionable Item Occurred). Add Any Employee Comments.

Root Cause(s) Analysis (RCA):

1. Lack of skill or knowledge.
2. Lack of or inadequate operational procedures or work standards.
3. Inadequate communication of expectations regarding procedures or work standards.
4. Inadequate tools or equipment.
5. Correct way takes more time and/or requires more effort.
6. Short-cutting standard procedures is positively reinforced or tolerated.
7. Person thinks there is no personal benefit to always doing the job according to standards.
8. Uncontrollable.

Questionable Item #	RCA #	Solution(s): How to Prevent Questionable Behavior From Reoccurring	Person Responsible	Due Date	Closure Date

Results of Solution Verification and Validation

Reviewed by	Date	Reviewed by	Date

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Loss Prevention Observation (LPO) Form

Environmental Operations

	PRE-TASK PREPARATION	Correct	Questionable	Comments
1.	Are Health and Safety Plan / MSDSs on site?			
2.	Is the employee familiar / trained on task?			
3.	OSHA-required training / medical surveillance?			
4.	Was utility mark out / check performed?			
5.	Was traffic hazard addressed / work area marked?			
6.	Are walking / working surfaces free of hazards?			
7.	Was the tailgate safety meeting performed?			
8.	Was SPSA performed prior to beginning work?			
9.	Communicates intentions to other personnel?			
10.	Knowledge of emergency procedures?			
11.	Distance between equipment and power lines?			
12.	Personal protective equipment?			
13.	Air monitoring equipment on site, calibrated?			
14.	Is a first aid kit / fire extinguisher on site?			
15.	Is one person trained in first aid / CPR?			
16.	Are work zones established and marked?			
	PERFORMING TASK			
17.	SPSA before beginning new task?			
18.	Correct body positioning?			
19.	Proper lifting / pushing / pulling techniques?			
20.	Keep hands / body away from pinch points?			
21.	Are walking / working surfaces kept clear of debris?			
22.	Faces traffic as appropriate?			
23.	Do vehicles / barricades exist to protect against traffic?			
24.	Is the drill rig located properly, blocked / chocked?			
25.	Is the drill rig moved only with derrick lowered?			
26.	Is the excavator located on stable ground?			

27.	Is eye contact made with equipment operator?			
28.	Is spoil at least 2 feet back from edge of excavation?			
29.	Is the excavation shored / sloped / benched?			
30.	Is the excavation entry controlled?			
31.	Are equipment / tools used properly?			
32.	Is electrical equipment connected through GFCI?			
33.	Are power tools handled properly?			
34.	Are electrical cords inspected / in good condition?			
35.	Follows lockout / tagout procedures?			
36.	Air monitoring conducted / action levels understood?			
37.	Was equipment decontaminated properly?			
38.	Were personnel decontaminated prior to eating / drinking / smoking?			
39.	Was the decontamination effective?			
	POST – TASK			
40.	Procedures / JSA adequate?			
41.	Are equipment / tools stored properly?			
42.	Proper storage of soil / water / waste material?			
43.	Is the work area secured?			
44.	Other?			
	Total #			**% Safe:** (Total Correct/[Total Correct + Total Questionable]) * 100]

Attachment D

Incident/Near Miss Investigation Form

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Incident / Near-Miss Investigation Report

☐ OSHA Recordable	☐ First Aid Injury	☐ Fire	Date of Incident:
☐ Lost Workday Injury	☐ Vehicle Accident	☐ Spill / Leak	
☐ Restricted Duty Injury	☐ Equipment Damage	☐ Near Miss	Incident Number:

Every employee injury, accident, and near miss must be reported within 24 hours of the injury. If the incident results in hospitalization, an immediate report must be made by telephone to the Project Manager and the Health and Safety Officer.

Project Information

Project Name: | Project #

Location of Incident:

Employee

Name: | Employee Number:

Employment Status: ☐ Regular ☐ Part Time | How long in present job?

Injury or Illness Information

Where did the incident / near miss occur? (number, street, city, state, zip):

Employee's specific activity at the time of the incident / near miss:

Equipment, materials, or chemicals the employee was using when the incident / near miss occurred (e.g., the equipment employee struck against or that struck the employee; the vapor inhaled or material swallowed; what the employee was lifting, pulling, etc.):

Describe the specific injury or illness (e.g., cut, strain, fracture, etc.):

Body part(s) affected (e.g., back, left wrist, right eye, etc.):

Name and address of treatment provider (e.g., physician or clinic): | Phone No.:

If hospitalized, name and address of hospital: | Phone No.:

Date of injury or onset of illness: / / | Time of event or exposure: ☐ AM ☐ PM

Did employee miss at least one full shift's work? ☐ No ☐ Yes, 1st date absent (MM/DD/YYYY) / /

Has employee returned to work? ☐ Regular work ☐ Restricted work ☐ No

☐ Yes, date returned (MM/DD/YYYY) / /

To whom reported: | Other workers injured / made ill in this event? ☐ Yes ☐ No

Description of Incident / Near Miss: (Describe what happened and how it happened.)

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Incident / Near-Miss Investigation Report

Motor Vehicle Accident (MVA)				Company Vehicle?	☐ Yes ☐ No		
Accident Location (street, city, state)							
Vehicle Towed?	☐ Yes ☐ No	Other Vehicle?	☐ Yes ☐ No	# Vehicles Towed:		# of Injuries:	

Spill		
Material Spilled:	Quantity:	Source:
Agency Notifications:		
Cost of Incident $		

Third Party Incidents			
Name of Owner:		Address:	Telephone:
Description of Damage:			
Witness Name:		Address:	Telephone:
Witness Name:		Address:	Telephone:

#	**Root Cause and Contributing Factors: Conclusion (Describe in Detail Why Incident / Near Miss Occurred)**
1	
2	
3	
4	
5	

Root Cause(s) Analysis (RCA):

1. Lack of skill or knowledge.
2. Lack of or inadequate operational procedures or work standards.
3. Inadequate communication of expectations regarding procedures or work standards.
4. Inadequate tools or equipment.
5. Correct way takes more time and / or requires more effort.
6. Short-cutting standard procedures is positively reinforced or tolerated.
7. Person thinks there is no personal benefit to always doing the job according to standards.
8. Uncontrollable.

#	RCA #	Solution(s): How to Prevent Incident / Near Miss From Reoccurring	Person Responsible	Due Date	Closure Date

Investigation Team Members		
Name	Job Title	Date

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Incident / Near-Miss Investigation Report

Results of Solution Verification and Validation

Reviewed By

Name	Job Title	Date
	Project Manager	
	Health and Safety Reviewer	

Attachment E

Air Monitoring Log

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Air Monitoring Log

Project: **Date:**

Monitoring Instruments:

Air Monitor: **Activity:**

Level of Protection:

Time	Location	Instrument Reading	Comments

Attachment F

Underground/Overhead Utilities Checklist

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

BLASLAND, BOUCK & LEE, INC. engineers & scientists	Underground / Overhead Utility Checklist
Project Name:	**Date:**
Project Number:	**Location:**
Prepared By:	**Project Manager:**

This checklist must be completed for any intrusive subsurface work such as excavation or drilling. It documents that overhead and underground utilities in the work area are identified and located. The Project Manager shall request utility markouts before the start of field operations to allow the client and utility companies sufficient time to provide them. If complete information is not available, a magnetometer or other survey shall be performed to locate obstacles prior to intrusive subsurface activities.

Procedure: A diagram of the work area depicting the proposed location of intrusive subsurface work sites (i.e., boring locations, excavation locations) must be attached to this form. The diagram must clearly indicate the areas checked for underground structures / utilities, and overhead power lines. This form and the diagram must be signed by the BBL Project Manager (if present), the BBL Site Supervisor, and the client representative.

Type of Structure	Present	Not Present	Method of Markout
Electric Power Line			
Natural Gas Line			
Telephone Line			
Water Line			
Product Line			
Sewer Line			
Steam Line			
Drain Line			
Underground Tank			
Underground Cable			
Overhead Power Line			
Overhead Product Line			
Other (Specify)			

Reviewed By

Name	Job Title	Date
	Client Representative	
	BBL Project Manager	
	BBL Site Supervisor	

Attachment G

Site Hot Work Form

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Site Hot Work Permit

Permit #:

Project:

ALL COPIES OF PERMIT MUST REMAIN AT JOB SITE UNTIL THE WORK IS COMPLETE

Location and Description of Hot Work:

Checklist	YES	NO	N/A	COMMENT
Is there any alternate procedure to use instead of hot work?				
Is it possible to move the hot work to a designated hot work area?				
Is it possible to move all fire hazards at least 35 feet away?				
If all fire hazards cannot be removed, can guards, barriers, or screens be used to confine any heat, sparks, or slag, and to protect the immovable fire hazards?				
Are there any flammable or combustible liquid storage areas within 50 feet?				
Is the area where the work is to be performed free of combustible material to heat, sparks, flying sparks, or slag?				
Are combustible materials adjacent to the opposite side of partitions, walls, or ceilings protected by guards or moved 35 feet away from the surface?				
Is everything moved or protected that could be damaged by sparks or water?				
Is suitable fire extinguishing equipment on hand and ready for immediate use?				
Is the sprinkler system in the area operational?				
Are the surrounding employees in an area where flying sparks and slag may injure them?				
Have precautions been implemented to prevent injury to employees?				
Has the area supervisor been notified?				
Is a fire watch in place?				
Is hot work to be conducted in a confined space?				
Is appropriate personal protective equipment and respiratory protection being used?				

The area where hot work is being conducted must remain attended for at least 30 minutes after completion of the work.

Monitoring Frequency: **Continuous** **Every 30 min.** **Other**

Monitor's Name: ________________________________

Time of Reading	Hot Work Air Monitoring Parameters		
	% Oxygen>19.5%	% LEL <10%	Other

Air Monitor ____
Print Name

____
Signature Date Time

Attachment H

Health and Safety Plan Acknowledgement

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Health and Safety Plan Acknowledgment

I have read the Site-Specific Health and Safety Plan, or its contents have been presented to me, and I understand the contents and I agree to abide by its requirements.

Name (Print)	Signature	Representing	Date

Attachment I

Health and Safety Inspection Form

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Health and Safety Inspection Form

Project Name:	**Date:**			
Project Number:	**Location:**			
Prepared By:	**Project Manager:**			
Auditor:	**HSS On Site:**			
	YES	**NO**	**N/A**	**COMMENTS**
GENERAL				
Is the HASP on site?				
Is the HASP finalized and approved?				
Is the OSHA poster displayed?				
Are emergency telephone numbers posted?				
Is emergency eyewash immediately available?				
Is an emergency shower immediately available?				
Are emergency notification means available (radio, telephone)?				
Is a first-aid kit immediately available?				
Is the first-aid kit adequately stocked?				
Is there a proper sanitation facility on site?				
DOCUMENTATION AND RECORDKEEPING				
Are only personnel listed and approved in the HASP on site?				
Are all personnel properly trained? (Check company-issued wallet cards.)				
Is the daily field log kept by the Site Manager?				
Are levels of PPE recorded?				
Are contaminant levels recorded?				
Are site surveillance records kept by HSS?				
Is a copy of current fit test records on site?				
Are calibration records maintained for air monitoring equipment?				
Are accident / incident forms on site?				
Are field team review sheets signed?				
Are additional hospital route directions available?				
Is the visitors' logbook being accurately maintained?				
Are MSDSs available for all chemicals on site?				
Are HASP revisions recorded?				
Is the first-aid kit inspected weekly?				
Are daily safety meetings held?				
Are emergency procedures discussed during safety meetings?				

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Health and Safety Inspection Form

	YES	NO	N/A	COMMENTS
EMERGENCY RESPONSES				
Is a vehicle available on site for transportation to the hospital?				
Are fire extinguishers on site and immediately available at designated work areas?				
Is at least one person trained in CPR and first aid on site at all times during work activities?				
Do all personnel know who is trained in CPR / first aid?				
PERSONAL PROTECTIVE EQUIPMENT (PPE)				
Is proper PPE being worn as specified in HASP?				
Level of PPE being worn.				
Is PPE adequate for work conditions?				
If not, give reason.				
Upgrade/downgrade to PPE level.				
Does any employee have facial hair that would interfere with respirator fit?				
If yes, willing to shave, as necessary?				
Fit-tested within the last year? (Documentation present)				
If Level B, is a back-up / emergency person suited up (except for air)?				
Does the HSS periodically inspect PPE and equipment?				
Is the PPE not in use properly stored?				
Is all equipment required in the HASP on site?				
Properly calibrated?				
In good condition?				
Used properly?				
Other equipment needed?				
List.				
Is monitoring equipment covered with plastic to minimize contamination?				
PERSONNEL AND EQUIPMENT DECONTAMINATION				
Is the decontamination area properly designated?				
Is appropriate cleaning fluid used for known or suspected contaminants?				
Are appropriate decontamination procedures used?				
Are decontamination personnel wearing proper PPE?				

Is the equipment decontaminated?				

BBL® BLASLAND, BOUCK & LEE, INC. engineers & scientists	Health and Safety Inspection Form			
	YES	NO	N/A	COMMENTS
PERSONNEL AND EQUIPMENT DECONTAMINATION (continued)				
Are sample containers decontaminated?				
Are disposable items replaced as required?				
WORK PRACTICES				
Was proper collection and disposal of potentially contaminated PPE performed?				
Was proper collection and disposal of decontamination fluid performed?				
Is water available for decontamination?				
Is the buddy system used?				
Is equipment kept off drums and the ground?				
Is kneeling or sitting on drums or the ground prohibited?				
Do personnel avoid standing or walking through puddles or stained soil?				
Are work zones established?				
If night work is conducted, is there adequate illumination?				
Is smoking, eating, or drinking in the exclusion or CRZ prohibited?				
To the extent feasible, are contaminated materials handled remotely?				
Are contact lenses not allowed on site?				
Is entry into excavations not allowed unless properly shored or sloped?				
Is a competent person on site during excavation?				
Are all unusual situations on site listed in HASP?				
If not, when?				
Action taken?				
HASP revised?				
CONFINED SPACE ENTRY				
Are employees trained according to 1910.146 – Confined Space Entry?				
Are all confined spaces identified? If not, list:				
Is all appropriate equipment available and in good working order?				
Is equipment properly calibrated?				
Are confined space permits used?				
Are confined space permits completely and correctly filled out?				

*N/A = Not Applicable

Attachment J

Lockout/Tagout Form

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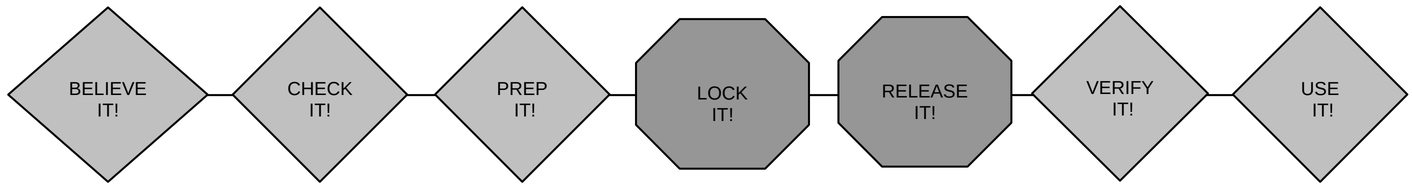
Lockout / Tagout Equipment-Specific Energy Control Procedure



Equipment Identification:

____

____

Hazardous Energy Source		Isolation Device			Verifying Lockout Means of Verification of Lockout
Type and Magnitude	Function	Type	Location	I.D. No.	
Electrical 120v					
Pneumatic					
Hydraulic					
Mechanical					
Potential					
Gravity					
Other					
Other					
Other					
Area:		Date of Last Review:			Authorized by:

02/21/05
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Attachment K

Sediment Sampling Checklist

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SEDIMENT/SURFACE WATER SAMPLING CHECKLIST

Project Name/Number____ **Date**________

Location____

Prepared By__________________________ **Project Manager**______________________

This checklist must be completed for any sediment or surface water sampling. It documents that the required, permits, notifications, procedures and equipment are in place prior to commencing sampling activities. The Project Manager shall identify the need for and arrange to obtain sampling permits, clearance or right-of-way access from the appropriate entity during project planning.

Procedure

Prior to any work on a navigable waterway or any activity that requires access the following items will be completed:

Activity:	Required for project:	Completed:	Comments:
Access rights to property	YES NO	YES NO	
Activity planned that impedes traffic on navigable waterway	YES NO	YES NO	
Notification and approval obtained from United States Coast Guard and/or other regulating authority (County, US Parks Service, EPA)	YES NO	YES NO	
Buoys, signs markings or other forms of notification present	YES NO	YES NO	
Other (Specify)			

Boating/Water Safety Checklist:

Activity:	Required for project:	Requirement:	Comments:
Working on over or near water (within 6 feet)	YES NO	PFD Available for all personnel	
Boat has current registration, has been inspected and loaded safely	YES NO	Capacity, load distribution PFDs and throwable floatation device available Fire extinguisher on board	
Boat operator has appropriate training (USCG Boating Safety Course or equivalent)	YES NO		
Sampling on or near water below 50 degrees Fahrenheit	YES NO	Cold water immersion suit for affected personnel	
Method of communication available	YES NO	Radio, cell phone or scheduled check-in	

Client Representative____ Date__________

BBL Project Manager____ Date__________

BBL Site Supervisor____ Date__________

Attachment L

NYS CAMP

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APPENDIX 1A

New York State Department of Health
Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less **-** but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

<u>Particulate Monitoring, Response Levels, and Actions</u>

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

Attachment M

Chemical Hazard Information

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

CHEMICAL HAZARD INFORMATION
NYSEG Binghamton, Washington Street, Former MGP Site

Substance [CAS Number]	IP[1] (eV)	Odor Threshold (ppm)	Route[2]	Symptoms of Exposure	Treatment	TWA[3]	STEL[4]	Source[5]	IDLH (NIOSH)[6]
Benzene [71-43-2]	9.24	34-119	Inh Abs Ing Con	Irritated eyes, nose, and respiratory system; giddiness; headache; nausea; staggered gait; fatigue; anorexia, lassitude; dermatitis; bone marrow depression – carcinogenic	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	1 ppm (0.5 ppm) NIC-0.1 skin 0.1 ppm	 2.5 ppm	PEL TLV REL	Ca (500 ppm)* *OSHA 29 CFR 1910.1028
Coal-tar-pitch volatiles (benzene-soluble fraction) (polynuclear aromatic hydrocarbons [PAH]) [65996-93-2]	ND	ND	Ing Con	Eye sensitivity to light; eye and skin irritation, dermatitis, bronchitis; carcinogenic	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	0.2 mg/m^3 0.2 mg/m^3 0.1 mg/m^3		PEL TLV REL	Ca [80 mg/m^3]
Cyanides: calcium, potassium, and sodium [592-01-8; 151-50-8; 143-33-9]	NA	ND	Inh Abs Ing Con	Asphyxiation and death can occur; weakness, headache, and confusion; nausea and vomiting; increased respiratory rate; slow respiratory gasping; irritated eyes and skin	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	5 mg/m^3 5 mg/m^3 (skin)	C5 mg/m^3* C5 mg/m^3 *10 min	PEL TLV REL	25 mg/m^3
Ethylbenzene [100-41-4]	8.76	0.09-0.6	Inh Ing Con	Irritated eyes, mucous membranes; headache; dermatitis; narcosis, coma	Eye: Irrigate immediately Skin: Water flush immediately Breath: Respiratory support Swallow: Immediate medical attention	100 ppm 100 ppm 100 ppm	125 ppm 125 ppm 125 ppm	PEL TLV REL	800 ppm
Toluene [108-88-3]	8.82	0.16-37	Inh Abs Ing Con	Fatigue, weakness; confusion, euphoria, dizziness; headache; dilated pupils, lacrimation; nervousness, muscular fatigue, insomnia; paralysis; dermatitis	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	100 ppm 50 ppm (skin) 100 ppm	150 ppm 150 ppm	PEL TLV REL	500 ppm
Xylene (o-, m-, and p-isomers) [1330-20-7; 95-47-6; 108-38-3; 106-42-3]	8.56 8.56 8.44	1.1-20	Inh Abs Ing Con	Dizziness, excitement, drowsiness, incoordination, staggering gait; irritated eyes, nose, throat; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap wash immediately Breath: Respiratory support Swallow: Immediate medical attention	100 ppm 100 ppm 100 ppm	150 ppm 150 ppm 150 ppm	PEL TLV REL	900 ppm

[1]IP	=	Ionization potential (electron volts).
[2]Route	=	Inh, Inhalation; Abs, Skin absorption; Ing, Ingestion; and Con, Skin and/or eye contact.
[3]TWA	=	Time-weighted average. The TWA concentration for a normal workday (usually 8 or 10 hours) and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day without adverse effect.
[4]STEL	=	Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the TWA is not exceeded.
[5]PEL	=	Occupational Safety and Health Administration (OSHA) permissible exposure limit (29 CFR 1910.1000, Table Z).
[5]TLV	=	American Conference of Governmental Industrial Hygiene (ACGIH) threshold limit value – TWA.
[5]REL	=	National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit.
[6]IDLH (NIOSH)	=	Immediately dangerous to life or health (NIOSH). Represents the maximum concentration from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.
NE	=	None established. No evidence could be found for the existence of an IDLH (NIOSH Pocket Guide to Chemical Hazards, Pub. No. 90-117, 1990, 1997).
C	=	Ceiling limit value which should not be exceeded at any time.
Ca	=	Carcinogen.
NA	=	Not applicable.
ND	=	Not Determined.
LEL	=	Lower explosive limits.
LC_{50}	=	Lethal concentration for 50 percent of population tested.
LD_{50}	=	Lethal dose for 50 percent of population tested.
NIC	=	Notice of intended change (ACGIH).

<u>References</u>:

American Conference of Governmental Industrial Hygienists Guide to Occupational Exposure Values, 2004, compiled by the American Conference of Governmental Industrial Hygienists.

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Documentation of TLVs and BEIs, American Conference of Governmental Industrial Hygienists, 5th ed., 1986.

Fazzuluri, F.A., Compilation of Odor and Taste Threshold Values Data, American Society for Testing and Materials, 1978.

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Lewis, Richard J., Sr., 1992, Sax's Dangerous Properties of Industrial Materials, 8th ed., Van Nostrand Reinhold, New York.

Micromedex Tomes Plus (R) System, 1992, Micromedex, Inc.

National Institute for Occupational Safety and health Pocket Guide to Chemicals, Pub. 1990, No. 97-140, National Institute for Occupational Safety and Health. 2003.

Odor Threshold for Chemicals with Established Occupational Health Standards, American industrial Hygiene Association, 1989.

Respirator Selection Guide, 3M Occupational Health and Safety Division, 1993.

Verschuseren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand and Reinhold, 1977.

Workplace Environmental Exposure Levels, American Industrial Hygiene Association, 1992.

Attachment N

MSDS

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Genium Publishing Corp.
One Genium Plaza
Schenectady, NY 12304-4690
(518) 377-8854

Benzo(a)pyrene **MSDS No. 164**

Date of Preparation: 2/94

Section 1 - Chemical Product and Company Identification 43

Product/Chemical Name: Benzo(a)pyrene
Chemical Formula: $C_{20}H_{12}$; a polynuclear aromatic hydrocarbon
CAS No.: 50-32-8
Synonyms: BaP; 3,4-benz(a)pyrene; BP; 3,4-benzopyrene; 3,4-benzpyrene. Formerly called 1,2-benzpyrene.
Derivation: Synthesized from pyrene and succinic anhydride.
General Use: Benzo(a)pyrene is no longer used or produced commercially in the US. In its pure form, benzo(a)pyrene may be used as a research laboratory reagent. It also occurs in combustion products of coal, oil, petroleum, wood and other biological matter; in motor vehicle and other gasoline and diesel engine exhaust; in charcoal-broiled foods; in cigarette smoke and general soot and smoke of industrial, municipal, and domestic origin. It occurs naturally in crude oils, shale oils, coal tars, gases and fly ash from active volcanoes and forest fires. **Vendors:** Consult the latest *Chemical Week Buyers' Guide.* (73)

Section 2 - Composition / Information on Ingredients

Benzo(a)pyrene, ca 100 %wt; except in laboratories, benzo(a)pyrene is usually mixed with other coal tar pitch chemicals. Consider exposure limits for coal tar pitch volatiles as a guideline. However, because benzo(a)pyrene is considered a probable carcinogen to humans, it is recommended that exposures to carcinogens be limited to the lowest feasible concentration.

OSHA PELs
Coal tar pitch volatiles
8-hr TWA: 0.2 mg/m^3

ACGIH TLVs
A2: Suspected Human Carcinogen

NIOSH REL
10-hr TWA: 0.1 mg/m^3
Carcinogen; coal tar pitch volatile, cyclohexane extractable fraction.

DFG (Germany) MAK
None established

IDLH Level
700 mg/m^3
Coal tar pitch volatiles (benzene soluble fraction)

Section 3 - Hazards Identification

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Benzo(a)pyrene is a pale yellow, crystalline solid or powder that is irritating to the skin, eyes, and respiratory tract. It is a carcinogen and mutagen. Handle with extreme caution!

Wilson Risk Scale	
R	1
I	4
S	4
K	1

HMIS	
H	2*
F	1
R	0

* Chronic Effects
PPE†
†Sec. 8

Potential Health Effects

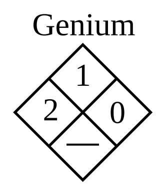
Primary Entry Routes: Inhalation, ingestion. **Target Organs:** Respiratory system, bladder, kidneys, skin.
Acute Effects: **Inhalation:** Respiratory tract irritation. **Eye:** Irritation and/or burns on contact. **Skin:** Irritation with burning sensation, rash, and redness; dermatitis on prolonged exposure. Sunlight enhances effects (photosensitization). **Ingestion:** None reported.
Carcinogenicity: IARC, NTP, NIOSH, ACGIH, EPA, and MAK list benzo(a)pyrene as: an IARC 2A (probably carcinogenic to humans: limited human evidence, sufficient evidence in experimental animals), an NTP-2 (reasonably anticipated to be a carcinogen: limited evidence from studies in humans or sufficient evidence from studies in experimental animals), a NIOSH-X (carcinogen defined with no further categorization); an ACGIH TLV-A2 (suspected human carcinogen: carcinogenic in experimental animals, but available epidemiological studies are conflicting or insufficient to confirm an increased risk of cancer in exposed humans); an EPA-B2 (sufficient evidence from animal studies, inadequate evidence or no data from epidemiological studies); and an MAK-A1 (capable of inducing malignant tumors as shown by experience with humans) carcinogen, respectively.
Medical Conditions Aggravated by Long-Term Exposure: Respiratory system, bladder, kidney, and skin disorders.
Chronic Effects: Inhalation: Cough and bronchitis. **Eye:** Photosensitivity and irritation. **Skin:** Skin changes such as thickening, darkening, pimples, loss of color, reddish areas, thinning of the skin, and warts. Sunlight enhances effects (photosensitization). **Other:** Gastrointestinal (GI) effects include leukoplakia (a pre-cancerous condition characterized by thickened white patches of epithelium on mucous membranes, especially of the mouth). Cancer of the lung, skin, kidneys, bladder, or GI tract is also possible. Smoking in combination with exposure to benzo(a)pyrene increases the chances of developing lung cancer. Persons with a high degree of inducibility of the enzyme aryl hydrocarbon hydroxylase may be a high risk population.
Comments: Pregnant women may be especially susceptible to exposure effects of benzo(a)pyrene; exposure may damage the fetus. In general, polyaromatic hydrocarbons such as benzo(a)pyrene tend to localize primarily in body fat and fatty tissues (for ex. breasts) and are excreted in breast milk. Benzo(a)pyrene may also affect the male reproductive system (testes and sperm).

Section 4 - First Aid Measures

Inhalation: Remove exposed person to fresh air and support breathing as needed.

Eye Contact: *Do not* allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of tepid water for at least 15 min. Consult an ophthalmologist if irritation or pain persist.
Skin Contact: *Quickly* remove contaminated clothing. Rinse with flooding amounts of water (less than 15 min). Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.
Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have the *conscious and alert* person drink 1 to 2 glasses of water to dilute. Inducing vomiting is not necessary since benzo(a)pyrene has a low acute toxicity and therefore, is generally an unnecessary procedure. Consider activated charcoal/cathartic.
After first aid, get appropriate in-plant, paramedic, or community medical support.
Note to Physicians: Monitor CBC and arterial blood gases, conduct liver, renal, and pulmonary function tests (if respiratory tract irritation is present), and urinalysis. Biological monitoring techniques testing for metabolites in blood or urine, or DNA adducts in blood or tissues are useful for epidemiological studies that determine if exposure has occurred. Because neither normal nor toxic levels have been established, those techniques may not be useful for evaluating individual patients.
Special Precautions/Procedures: Emergency personnel should protect against exposure.

Section 5 - Fire-Fighting Measures



Flash Point: None reported. Benzo(a)pyrene may burn, but does *not* readily ignite.
Autoignition Temperature: None reported.
LEL: None reported.
UEL: None reported.
Extinguishing Media: For small fires, use dry chemical, sand, water spray, or foam. For large fires, use water spray, fog, or foam.
Unusual Fire or Explosion Hazards: None reported.
Hazardous Combustion Products: Carbon monoxide and carbon dioxide.
Fire-Fighting Instructions: Isolate hazard and deny entry. If feasible and without undue risk, move containers from fire hazard area. Otherwise, cool fire-exposed containers with water spray until well after fire is extinguished. Do not release runoff from fire control methods to sewers or waterways.
Fire-Fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode and full protective clothing.

Section 6 - Accidental Release Measures

Spill /Leak Procedures: Notify safety personnel of large spills, remove heat and ignition sources, and provide adequate ventilation. Cleanup personnel should protect against dust inhalation and skin or eye contact. Clean up spills promptly.
Small Spills: Carefully scoop up spilled material and place into appropriate containers for disposal. For liquid spills, take up with a noncombustible, inert absorbent and place into appropriate containers for disposal.
Large Spills
Containment: For large spills, dike far ahead of liquid spill or contain dry spill for later disposal. Do not release into sewers or waterways.
Cleanup: *Do not* dry sweep! Use a vacuum with a HEPA filter or a wet method to reduce dust. After cleanup is complete, thoroughly decontaminate all surfaces. *Do not* reuse contaminated cleaning materials.
Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Handle with extreme caution and take all necessary measures to avoid exposure to benzo(a)pyrene because it is a carcinogen and mutagen. Follow good personal hygiene procedures and thoroughly wash hands with soap and water after handling. Use safety pipettes for all pipetting.
Storage Requirements: Store in tightly closed and properly labeled containers in a cool, well-ventilated area.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use a Class I, Type B, biological safety hood when working with benzo(a)pyrene in a laboratory. Decrease the rate of air extraction, so that benzo(a)pyrene can be handled without powder being blown around the hood. Keep glove boxes under negative pressure. Use vertical laminar-flow, 100% exhaust, biological safety cabinets for containment of in vitro procedures. The exhaust air flow should be sufficient to provide an inward air flow at the face opening of the cabinet. Ensure contaminated air sheaths that are under positive pressure are leak-tight. Never use horizontal laminar-flow hoods or safety cabinets where filtered air is blown across the working area towards the operator. Test cabinets before work begins to ensure they are functioning properly.
Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations as low as possible. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.[103]
Administrative Controls: Consider preplacement and periodic medical examinations with emphasis on the oral cavity, bladder, kidneys, skin, and respiratory tract. Conduct urinalysis including specific gravity, albumin, glucose, and microscopic examination of centrifuged sediment for red blood cells. Also, include 14” x 17” chest roentgenogram, FVC + FEV_1, and CBC to detect any leukemia or aplastic anemia. It is recommended that this exam be repeated on an annual basis and semi-

annual basis for employees 45 yr of age or older or with 10 or more years of exposure to coal tar pitch volatiles. Train workers about the hazards of benzo(a)pyrene and the necessary protective measures to prevent exposure. Periodically inspect lab atmospheres, surfaces such as walls, floors, and benches, and interior of fume hoods and air ducts for contamination. Post appropriate signs and labels on doors leading into areas where benzo(a)pyrene is used.

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. The following respirator recommendations are for coal tar pitch volatiles. For any unknown concentration, wear any SCBA with a full facepiece and operated in a pressure-demand or other positive pressure mode, or any supplied-air respirator with a full facepiece and operated in a pressure-demand or other positive pressure mode in combination with an auxiliary SCBA operated in pressure-demand or other positive pressure mode. For escape, wear any air-purifying full facepiece respirator (gas mask) with a chin-style or front- or back-mounted organic vapor canister having a high-efficiency particulate filter, or any appropriate escape-type SCBA. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. In animal laboratories, wear protective suits (disposable, one-piece and close-fitting at ankles and wrists), gloves, hair covering, and overshoes. In chemical laboratories, wear gloves and gowns. Wear protective eyeglasses or chemical safety, gas-proof goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Because contact lens use in industry is controversial, establish your own policy.

Safety Stations: Make available in the work area emergency eyewash stations, safety/quick-drench showers, and washing facilities.

Contaminated Equipment: Shower and change clothes after exposure or at the end of the workshift. Separate contaminated work clothes from street clothes. Launder before reuse. Remove benzo(a)pyrene from your shoes and clean personal protective equipment. Use procedures to ensure laundry personnel are not exposed.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance and Odor: Pale yellow monoclinic needles with a faint, aromatic odor.

Vapor Pressure: >1 mm Hg at 68 ˚F (20 ˚C)

Formula Weight: 252.30

Specific Gravity (H_2O=1, at 4 ˚C): 1.351

Water Solubility: Insoluble; 0.0038 mg (+/- 0.00031 mg) in 1 L at 77 ˚F (25 ˚C)

Other Solubilities: Ether, benzene, toluene, xylene, concentrated hydrosulfuric acid; sparingly soluble in alcohol, methanol.

Boiling Point: >680 ˚F (>360 ˚C); 540 ˚F (310 ˚C) at 10 mm Hg

Melting Point: 354 ˚F (179 ˚C)

Octanol/Water Partition Coefficient: log Kow= 6.04

Section 10 - Stability and Reactivity

Stability: Benzo(a)pyrene is stable at room temperature in closed containers under normal storage and handling conditions. It undergoes photo-oxidation when exposed to sunlight or light in organic solvents and is also oxidized by chromic acid and ozone.

Polymerization: Hazardous polymerization cannot occur.

Chemical Incompatibilities: Strong oxidizers (chlorine, bromine, fluorine) and oxidizing chemicals (chlorates, perchlorates, permanganates, and nitrates).

Conditions to Avoid: Avoid heat and ignition sources and incompatibles.

Hazardous Decomposition Products: Thermal oxidative decomposition of benzo(a)pyrene can produce carbon monoxide and carbon dioxide.

Section 11- Toxicological Information

Toxicity Data:*

Tumorigenic Effects:

Rat, oral: 15 mg/kg produced gastrointestinal and musculoskeletal tumors.

Mouse, inhalation: 200 ng/m^3/6 hr administered intermittently over 13 weeks produced tumors of the lungs.

Rabbit, skin: 17 mg/kg administered intermittently over 57 weeks produced tumors of the skin and appendages.

Teratogenicity:

Rat, oral: 2 g/kg administered 28 days prior to mating and 1-22 days of pregnancy produced a stillbirth.

Rat, oral: 40 mg/kg on the 14th day of pregnancy caused changes in the extra embryonic structures.

Mouse, oral: 75 mg/kg administered to the female during the 12-14 day of pregnancy produced biochemical and metabolic effects on the newborn.

Skin Effects:
Mouse: 14 µg caused mild irritation.

Mutagenicity:
Human, liver cell: 100 nmol/L caused DNA damage.
Human, lung cell: 1 µmol/L caused DNA damage.
Human, HeLa cell: 1500 nmol/L caused DNA inhibition.

* See NIOSH, *RTECS* (DJ3675000), for additional toxicity data.

Section 12 - Ecological Information

Ecotoxicity: Oysters, BCF (bioconcentration factor): 3000; rainbow trout, BCF: 920; *Daphnia pulex*, BCF: 13,000.
Environmental Transport: Some marine organisms such as phytoplankton, certain zooplankton, scallops (*Placopecten sp*), snails (*Litternia littorea*), and mussels (*Mytilus edulis*) lack a metabolic detoxification enzyme system to metabolize benzo(a)pyrene and therefore, tend to accumulate benzo(a)pyrene. Humic acid in solution may decrease bioconcentration.
Environmental Degradation: If released to water, benzo(a)pyrene adsorbs very strongly to particulate matter and sediments, bioconcentrates in aquatic organisms which cannot metabolize it, but does not hydrolyze. Direct photolysis at the water surface, evaporation, or biodegradation may be important, but adsorption may significantly retard these processes. Adsorption to particulates may also retard direct photolysis when benzo(a)pyrene is released to air. Benzo(a)pyrene may be removed from air by reaction with nitrogen dioxide (half-life, 7 days) or ozone (half-life, 37 min), or photochemically produced hydroxyl radicals (estimated half-life, 21.49 hr).
Soil Absorption/Mobility: It will adsorb very strongly to the soil. Although it is not expected to appreciably leach to the groundwater, groundwater samples indicate that it can be transported there. It is not expected to significantly evaporate or hydrolyze from soils and surfaces. However, it may be subject to appreciable biodegradation in soils.

Section 13 - Disposal Considerations

Disposal: Small quantities: 10 mL of a solution containing 0.3 mol/L of potassium permanganate and 3 mol/L of sulfuric acid will degrade 5 mg of benzo(a)pyrene. Also, can treat with sodium dichromate in strong sulfuric acid (1-2 days). Benzo(a)pyrene is also a good candidate for fluidized bed incineration at a temperature range of 842 to 1796 ˚F (450 to 980 ˚C) or rotary kiln incineration at 820 to 1600˚C. Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101):

Shipping Name: Environmentally hazardous substances, solid, n.o.s.*
Shipping Symbols: —
Hazard Class: 9
ID No.: UN3077
Packing Group: III
Label: Class 9
Special Provisions (172.102): 8, B54

Packaging Authorizations
a) Exceptions: 173.155
b) Non-bulk Packaging: 173.213
c) Bulk Packaging: 173.240

Quantity Limitations
a) Passenger, Aircraft, or Railcar: None
b) Cargo Aircraft Only: None

Vessel Stowage Requirements
a) Vessel Stowage: A
b) Other: —

* If it is in a quantity, in one package, which equals or exceeds the reportable quantity (RQ) of 1 lb (0.454 kg)

Section 15 - Regulatory Information

EPA Regulations:
Listed as a RCRA Hazardous Waste (40 CFR 261.33)
RCRA Hazardous Waste Number: U022
Listed as a CERCLA Hazardous Substance (40 CFR 302.4) per RCRA and CWA, Sec. 307(a)
CERCLA Reportable Quantity (RQ), 1 lb (0.454 kg)
SARA 311/312 Codes: 1,2
SARA Toxic Chemical (40 CFR 372.65): Not listed
SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not listed
OSHA Regulations:
Listed as an Air Contaminant (29 CFR 1910.1000, Table Z-1)
Listed as an OSHA Specifically Regulated Substance, Coal Tar Pitch Volatiles, (29CFR 1910.1002)

Section 16 - Other Information

References: 73, 103, 124, 127, 132, 133, 136, 139, 148, 164, 169, 174, 175, 184, 187, 189, 190
Prepared By .. MJ Wurth, BS **Industrial Hygiene Review** .... PA Roy, MPH **Medical Review** .... T Thoburn, MD, MPH
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Issue Date: 2000-07

Unleaded Gasoline
MSDS 467
AUT5000

Section 1 - Chemical Product and Company Identification 54.1

Material Name: Unleaded Gasoline **CAS Number:** 8006-61-9
Chemical Formula: Mixture of hydrocarbons
Synonyms: AUTOMOTIVE GASOLINE, LEAD-FREE; GASOLINE; MOTOR FUEL; MOTOR SPIRITS; NATURAL GASOLINE; PETROL; UNLEADED PETROL
General Use: Lead free motor fuel for internal combustion engines, 2-stroke and 4-stroke.

Section 2 - Composition / Information on Ingredients

Name	CAS	%
gasoline	8006-61-9	>90
benzene	71-43-2	5 max.

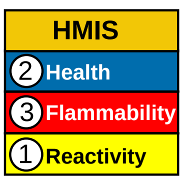
OSHA PEL
No data found.

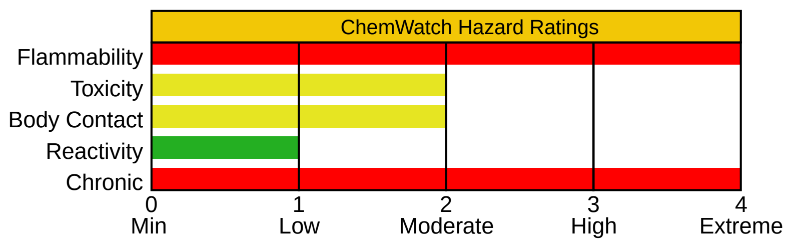
NIOSH REL
No data found.

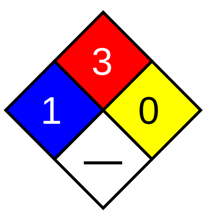
OSHA PEL Vacated 1989 Limits
TWA: 300 ppm; 900 mg/m^3;
STEL: 500 ppm; 1500 mg/m^3.

ACGIH TLV
TWA: 300 ppm; 890 mg/m^3;
STEL: 500 ppm; 1480 mg/m^3.

Section 3 - Hazards Identification







Fire Diamond

ANSI Signal Word
Danger!


Flammable

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Clear liquid; distinctive odor. Irritating to eyes/skin/respiratory tract. Also causes: dizziness, drunkenness, unconsciousness. Absorbed through skin. Chronic: dermatitis. Possible cancer hazard. Flammable. Can form explosive mixtures in air.

Potential Health Effects

Primary Entry Routes: inhalation, ingestion, skin contact
Target Organs: skin, eye, respiratory system, central nervous system (CNS)

Acute Effects

Inhalation: The vapor is discomforting to the upper respiratory tract and may be harmful if exposure is prolonged. Inhalation hazard is increased at higher temperatures. Acute effects from inhalation of high concentrations of vapor are pulmonary irritation, including coughing, with nausea; central nervous system depression - characterized by headache and dizziness, increased reaction time, fatigue and loss of coordination. If exposure to highly concentrated solvent atmosphere is prolonged this may lead to narcosis, unconsciousness, even coma and possible death. WARNING: Intentional misuse by concentrating/inhaling contents may be lethal. High inhaled concentrations of mixed hydrocarbons may produce narcosis characterized by nausea, vomiting and lightheadedness. Inhalation of aerosols may produce severe pulmonary edema, pneumonitis and pulmonary hemorrhage. Inhalation of petroleum hydrocarbons consisting substantially of low molecular weight species may produce irritation of mucous membranes, incoordination, giddiness, nausea, vertigo, confusion, headache, appetite loss, drowziness, tremors and anesthetic stupor. Massive exposures may produce central nervous system depression with sudden collapse and deep coma; fatalities have been recorded. Irritation of the brain and/or apneic anoxia may produce convulsions. Although recovery following overexposure is generally complete, cerebral micro- hemorrhage of focal post-inflammatory scarring may produce eleptiform seizures some months after the exposure. Pulmonary episodes may include chemical pneumonitis with edema and hemorrhage. The lighter hydrocarbons may produce kidney and neurotoxic effects. Liquid paraffins may produce anesthesia and depressant actions leading to weakness, dizziness, slow and shallow respiration, unconsciousness, convulsions and death. C_{5-7} paraffins may also produce polyneuropathy. Aromatic hydrocarbons accumulate in lipid-rich tissues (typically the brain, spinal cord and peripheral nerves) and may produce functional impairment manifested by nonspecific symptoms such as nausea, weakness, fatigue, vertigo; severe exposures may produce inebriation or unconsciousness. Many of the petroleum hydrocarbons are cardiac sensitizers and may cause ventricular fibrillations.

Eye: The liquid may produce eye discomfort and is capable of causing temporary impairment of vision and/or transient eye inflammation, ulceration. The vapor is discomforting to the eyes. Petroleum hydrocarbons may produce pain after direct contact with the eyes. Slight, but transient, disturbances of the corneal epithelium may also result. The aromatic fraction may produce irritation and lachrymation. The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

Skin: The material is moderately discomforting to the skin if exposure is prolonged. The material contains a component that may be absorbed through the skin and may cause drying of the skin, which may lead to dermatitis from repeated exposures over long periods. Toxic effects may result from skin absorption. Open cuts, abraded or irritated skin should not be exposed to this material. The material may accentuate any pre-existing dermatitis condition.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments. The liquid may produce gastrointestinal discomfort and may be harmful if swallowed. Ingestion may result in nausea, pain and vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis. Ingestion of petroleum hydrocarbons may produce irritation of the pharynx, esophagus, stomach and small intestine with edema and mucosal ulceration. Resulting symptoms include a burning sensation in the mouth and throat. Large amounts may produce narcosis with nausea and vomiting, weakness or dizziness, slow and shallow respiration, swelling of the abdomen, unconsciousness and convulsions. Myocardial injury may produce arrhythmias, ventricular fibrillation and electrocardiographic changes. Central nervous system depression may also occur. Light aromatic hydrocarbons produce a warm, sharp, tingling sensation on contact with taste buds and may anesthetize the tongue. Aspiration into the lungs may produce coughing, gagging, and a chemical pneumonitis with pulmonary edema and hemorrhage.

Carcinogenicity: NTP - Not listed; IARC - Group 2B, Possibly carcinogenic to humans; OSHA - Not listed; NIOSH - Listed as carcinogen; ACGIH - Class A3, Animal carcinogen; EPA - Not listed; MAK - Not listed.

Chronic Effects: Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes. Prolonged or continuous skin contact with the liquid may cause defatting with drying, cracking, irritation and dermatitis following. Chronic poisoning may occur from vapor inhalation or skin absorption. The most significant toxic effect is insidious and irreversible injury to the blood-forming tissue by benzene. Leukemia may develop. Chronic exposure may cause headache, fatigue, loss of appetite and lassitude with incipient blood effects including anemia and blood changes. Gasoline "sniffing" has caused severe nerve damage. Repeated or prolonged exposure to mixed hydrocarbons may produce narcosis with dizziness, weakness, irritability, concentration and/or memory loss, tremor in the fingers and tongue, vertigo, olfactory disorders, constriction of visual field, paresthesias of the extremities, weight loss and anemia and degenerative changes in the liver and kidney. Chronic exposure by petroleum workers to the lighter hydrocarbons has been associated with visual disturbances, damage to the central nervous system, peripheral neuropathies (including numbness and paresthesias), psychological and neurophysiological deficits, bone marrow toxicities (including hypoplasia, possibly due to benzene) and hepatic and renal involvement. Chronic dermal exposure to petroleum hydrocarbons may result in defatting which produces localized dermatoses. Surface cracking and erosion may also increase susceptibility to infection by microorganisms.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air. Lay patient down. Keep warm and rested.
If breathing is shallow or has stopped, ensure clear airway and apply resuscitation. Transport to hospital, or doctor.

Eye Contact: Immediately hold the eyes open and wash continuously for at least 15 minutes with fresh running water. Ensure irrigation under eyelids by occasionally lifting the upper and lower lids. Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact: Immediately remove all contaminated clothing, including footwear (after rinsing with water). Wash affected areas thoroughly with water (and soap if available). Seek medical attention in event of irritation.

Ingestion: Contact a Poison Control Center. If swallowed, do NOT induce vomiting. Give a glass of water.

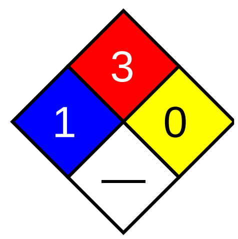
After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: For acute or short term repeated exposures to petroleum distillates or related hydrocarbons:

1. Primary threat to life from pure petroleum distillate ingestion and/or inhalation is respiratory failure.
2. Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO_2 <50 mm Hg or pCO_2 >50 mm Hg) should be intubated.
3. Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
4. A chest x-ray should be taken immediately after stabilization of breathing and circulation to document aspiration and detect the presence of pneumothorax.
5. Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitization to catecholamines.
   Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
6. Lavage is indicated in patients who require decontamination; ensure use of cuffed endotracheal tube in adult patients.

Section 5 - Fire-Fighting Measures

Flash Point: -43 °C
Autoignition Temperature: 280 °C
LEL: 1.4% v/v
UEL: 7.6% v/v



Fire Diamond

Extinguishing Media: Foam. Dry chemical powder. Bromochlorodifluoromethane (BCF) (where regulations permit). Carbon dioxide.

General Fire Hazards/Hazardous Combustion Products: Liquid and vapor are highly flammable. Severe fire hazard when exposed to heat, flame and/or oxidizers. Vapor forms an explosive mixture with air. Severe explosion hazard, in the form of vapor, when exposed to flame or spark. Vapor may travel a considerable distance to source of ignition. Heating may cause expansion/decomposition with violent rupture of containers. On combustion, may emit toxic fumes of carbon monoxide (CO).

Fire Incompatibility: Avoid contamination with oxidizing agents, i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc., as ignition may result.

Fire-Fighting Instructions: Alert fire department and tell them location and nature of hazard. May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water ways. If safe, switch off electrical equipment until vapour fire hazard removed.
Use water delivered as a fine spray to control fire and cool adjacent area. Avoid spraying water onto liquid pools. Do not approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire.

Section 6 - Accidental Release Measures

Small Spills: Remove all ignition sources. Clean up all spills immediately. Avoid breathing vapors and contact with skin and eyes. Control personal contact by using protective equipment. Contain and absorb small quantities with vermiculite or other absorbent material. Wipe up. Collect residues in a flammable waste container.

Large Spills: Clear area of personnel and move upwind. Alert fire department and tell them location and nature of hazard. May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water ways. No smoking, naked lights or ignition sources. Increase ventilation. Stop leak if safe to do so.
Water spray or fog may be used to disperse/absorb vapor. Contain spill with sand, earth or vermiculite. Use only spark-free shovels and explosion proof equipment. Collect recoverable product into labeled containers for recycling. Absorb remaining product with sand, earth or vermiculite. Collect solid residues and seal in labelled drums for disposal. Wash area and prevent runoff into drains.
If contamination of drains or waterways occurs, advise emergency services.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Avoid generating and breathing mist. Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps. DO NOT enter confined spaces until atmosphere has been checked. Avoid smoking, bare lights, heat or ignition sources. When handling, DO NOT eat, drink or smoke. Vapor may ignite on pumping or pouring due to static electricity. DO NOT use plastic buckets. Ground and secure metal containers when dispensing or pouring product. Use spark-free tools when handling. Avoid contact with incompatible materials. Keep containers securely sealed. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Use good occupational work practices. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

Recommended Storage Methods: Metal can, metal drum. Packing as recommended by manufacturer. Check all containers are clearly labeled and free from leaks.

Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: CARE: Use of a quantity of this material in confined space or poorly ventilated area, where rapid build-up of concentrated atmosphere may occur, could require increased ventilation and/or protective gear. Use in a well-ventilated area. If inhalation risk of overexposure exists, wear a NIOSH approved organic-vapor respirator. Correct respirator fit is essential to obtain adequate protection. In confined spaces where there is inadequate ventilation, wear full-face air supplied breathing apparatus. Provide adequate ventilation in warehouse or closed storage areas.

Personal Protective Clothing/Equipment

Eyes: Safety glasses with side shields; or as required, chemical goggles.
Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Barrier cream with polyethylene gloves or PVC gloves. Safety footwear. Do NOT use this product to clean the skin.

Respiratory Protection:
Exposure Range >300 to 1000 ppm: Air Purifying, Negative Pressure, Half Mask
Exposure Range >1000 to 15,000 ppm: Air Purifying, Negative Pressure, Full Face
Exposure Range >15,000 to 300,000 ppm: Supplied Air, Constant Flow/Pressure Demand, Full Face
Exposure Range >300,000 to unlimited ppm: Self-contained Breathing Apparatus, Pressure Demand, Full Face
Cartridge Color: black

Other: Overalls. Ensure that there is ready access to eye wash unit. Ensure there is ready access to an emergency shower.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Purple, highly flammable, volatile liquid with characteristic sharp odor. Floats on water. Consists of a complex mixture of hydrocarbons with small amounts of residual benzene from the refining operations.

Physical State: Liquid
Vapor Pressure (kPa): 53.33 at 20 °C
Vapor Density (Air=1): > 2
Formula Weight: Not applicable.
Specific Gravity (H_2O=1, at 4 °C): 0.72-0.735 at 15 °C
Water Solubility: Insoluble
Evaporation Rate: Fast

pH: Not applicable
pH (1% Solution): Not applicable.
Boiling Point Range: 38.89 °C (102 °F)
Freezing/Melting Point Range: Not available
Volatile Component (% Vol): 100
Decomposition Temperature (°C): Not available.

Section 10 - Stability and Reactivity

Stability/Polymerization: Presence of incompatible materials. Product is considered stable. Hazardous polymerization will not occur.

Storage Incompatibilities: Avoid storage with oxidizers.

Section 11 - Toxicological Information

Unless otherwise specified, data extracted from RTECS - Registry of Toxic Effects of Chemical Substances

TOXICITY	IRRITATION
Oral (rat) LD50: 18800 mg/kg	Skin (rabbit): 500 mg/24h mild

Section 12 - Ecological Information

Environmental Fate: No data found.
Ecotoxicity: No data found.
Biochemical Oxygen Demand (BOD): 8%, 5 days

Section 13 - Disposal Considerations

Disposal: Consult manufacturer for recycling options and recycle where possible. Follow all applicable federal, state, and local laws. Incinerate residue at an approved site. Recycle containers where possible, or dispose of in an authorized landfil.
BEWARE: Empty solvent, paint, lacquer and flammable liquid drums present a severe explosion hazard if cut by flame torch or welded. Even when thoroughly cleaned or reconditioned, the drum seams may retain sufficient solvent to generate an explosive atmosphere in the drum.

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101):

Shipping Name: MOTOR SPIRIT OR GASOLINE OR PETROL
Hazard Class: 3.1
ID No.: 1203
Packing Group: II
Label: Flammable Liquid[3]

Additional Shipping Information: PETROL

Section 15 - Regulatory Information

EPA Regulations:
RCRA 40 CFR: Not listed
CERCLA 40 CFR 302.4: Not listed
SARA 40 CFR 372.65: Not listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Research Date: ....1999-11 **Review Date:** 2000-07

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Issue Date: 2000-07

Cyanide Ion
MSDS 789
CYA1720

Section 1 - Chemical Product and Company Identification 54.1

Material Name: Cyanide Ion **CAS Number:** 57-12-5
Chemical Formula: CN
Structural Chemical Formula: CN
Synonyms: CARBON NITRIDE ION; CYANIDE; CYANIDE(1-); CYANIDE ANION; CYANIDE ION; CYANIDE(1-) ION; CYANIDE SOLUTIONS; CYANIDE,DRY; CYANURE; HYDROCYANIC ACID,ION(1-); ISOCYANIDE
General Use: Available ONLY for industrial and manufacturing purposes.

Section 2 - Composition / Information on Ingredients

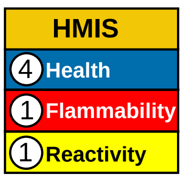
Name	CAS	%
cyanide ion	57-12-5	100

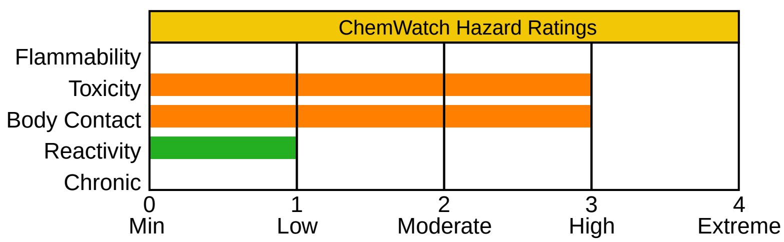
OSHA PEL
TWA: 5 mg/m^3; as CN.

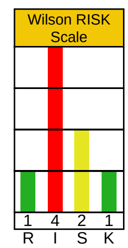
NIOSH REL
No data found.

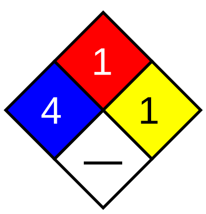
ACGIH TLV
No data found.

Section 3 - Hazards Identification









Fire Diamond

ANSI Signal Word

Danger!

Poison

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Almond odor. Poison. Irritating to the eyes/respiratory tract. Fast acting chemical asphyxiant that prevents tissue utilization of oxygen. Chronic: skin rash, appetite loss, weakness, dizziness, chest discomfort, nose bleed, hearing changes.

Potential Health Effects

Primary Entry Routes: inhalation, ingestion, skin absorption
Target Organs: brain, heart, lungs, skin, blood
Acute Effects
Inhalation: The dust is highly discomforting to the upper respiratory tract and extremely toxic and may be fatal. As little as a few breaths of higher concentrations of hydrogen cyanide vapor, given off from moist material, may cause instant collapse and stop breathing.
Eye: The solid/dust is corrosive to the eyes and is capable of causing severe damage with loss of sight. The material may be absorbed in toxic amounts through the eyes.
Skin: The solid/dust is highly discomforting to the skin and it is absorbed by the skin and may be fatal. The material is capable of causing chemical burns, ulceration and skin reactions which may lead to dermatitis. Exposure limits with "skin" notation indicate that vapor and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapor inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

The material may cause second degree burns and deep ulcers. Prolonged or repeated skin contact with low concentrations of the dust may result in `cyanide rash' characterized by itching and skin eruptions.

Ingestion: Considered an unlikely route of entry in commercial/industrial environments.
The solid/dust is extremely toxic and may be fatal if swallowed unless immediate treatment is applied.
The adult lethal dose is less than 250 mg.

Carcinogenicity: NTP - Not listed; IARC - Not listed; OSHA - Not listed; NIOSH - Not listed; ACGIH - Not listed; EPA - Class D, Not classifiable as to human carcinogenicity; MAK - Not listed.

Chronic Effects: Cyanide prevents body cells from using oxygen.
Overexposure causes headache, dizziness, sweating, ineffective breathing and nausea which can be followed by a weak and irregular heartbeat, unconsciousness, convulsions, coma and death. Chronic exposure may interfere with iodine uptake by the thyroid and lead to its enlargement and related thyroid disorders. Loss of weight and appetite, mental deterioration, weakness and nervous system abnormalities may result.
Sodium cyanide is alkaline and is irritating and corrosive to body tissue.
Repeated minor contact causes cyanide rash, also itching, papules (small, superficial raised spots on the skin).
Inhalation may result in obstruction, bleeding, sloughs and in some cases perforations of the septum.

Section 4 - First Aid Measures

Inhalation: Remove to fresh air, lay down and rest.
If not breathing, ensure clear airway, apply resuscitation.
Keep patient warm.
Use approved cyanide antidote kit.
Transport to hospital.

Eye Contact: Immediately hold eyes open and flush continuously with running water for at least 15 minutes. Ensure irrigation under eyelids.
Seek medical attention without delay.

Skin Contact: Quickly but gently, wipe material off skin with a dry, clean cloth.
Immediately remove all contaminated clothing, including footwear.
Wash affected areas with water (and soap if available) for at least 15 minutes. Transport to hospital or doctor.

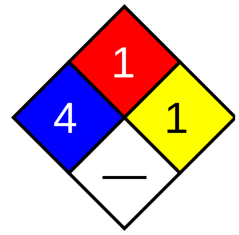
Ingestion: IMPORTANT: ESTABLISH A FIRST AID PLAN BEFORE WORKING WITH CYANIDES. ANTIDOTES SHOULD BE AVAILABLE ON SITE.
In all cases of cyanide exposure get medical help urgently after administering first aid.
NOTE: Amyl nitrite is no longer considered to have an antidotal role in the treatment of real or suspected cyanide poisoning. As a first aid measure its disadvantages include: (i) Vasodilatory effects may promote fatal cardiac arrhythmias (particularly if the patient is not really poisoned by cyanide), (ii) Disguise of any arrhythmias or respiratory stimuli used as an indication of true cyanide poisoning, (iii) Its role as a competitive inducer of methemoglobin in the blood-stream is highly variable and, alone, may produce levels of methemoglobin as low as 5% only.(iv) An increase in use of nitrite "poppers" as aphrodisiacs introduces substance-abuse problems.
For cyanide poisonings by any route:
1. Contact Poison Control Center.
2. Seek immediate medical attention.
3. Place casualty in coma position.
4. Give oxygen when available.
5. Consider external cardiac compression, mechanical resuscitation and use of antidote kit.
6. If breathing stops mouth-to-mouth resuscitation may be given only as a last resort. Should such resort prove necessary, first wash the casualty's mouth and lips. A first aid attendant must not inhale the expired air of the casualty.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians:
1.Signs & symptoms of acute & cyanide poisoning reflect cellular hypoxia and are often non-specific.
2.Cyanosis may be a late finding.
3.A bradycardia, hypertensive and tachypneic patient suggests poisoning especially if CNS and cardiovascular depression subsequently occurs.
4.Immediate attention should be directed towards assisted ventilation, administration of 100% oxygen, insertion of intravenous lines and institution of cardiac monitoring.
5.Obtain an arterial blood gas immediately and correct any severe metabolic acidosis (pH below 7.15).
6.Mildly symptomatic patients generally require supportive care alone.
Nitrites should not be given indiscriminately - in all cases of moderate to severe poisoning, they should be given in conjunction with thiosulfate.
As a temporizing measure supply amyl nitrite perles (0.2 mL inhaled 30 seconds every minute) until intravenous lines for sodium nitrite are established. 10 mL of a 3% solution is administered over 4 minutes to produce 20% methemoglobin in adults. Follow directly with 50 mL of 25% sodium thiosulfate, at the same rate, IV. If symptoms reappear or persist within 1/2-1 hour, repeat nitrite and thiosulfate at 50% of initial dose.
As the mode of action involves the metabolic conversion of the thiosulfate to thiocyanate, renal failure may enhance thiocyanate toxicity.

7.Methylene blue is not an antidote.

Section 5 - Fire-Fighting Measures



Fire Diamond

Flash Point: -17.8 °C Closed Cup
Extinguishing Media: Dry chemical powder.
Vaporizing liquid.
Do NOT use carbon dioxide (CO_2) or acidic chemical extinguishers.
General Fire Hazards/Hazardous Combustion Products: Pollutant. Noncombustible.
Dangerous hazard when exposed to heat or flame.
Contact with acids produces toxic fumes.
Decomposes on heating and produces toxic fumes of hydrogen cyanide, nitrogen oxides (NO_x).
Fire Incompatibility: Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.
Fire-Fighting Instructions: Contact fire department and tell them location and nature of hazard.
Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways.
Cool fire-exposed containers with water spray from a protected location.
Fight fire from a safe distance, with adequate cover.

Section 6 - Accidental Release Measures

Small Spills: Environmental hazard - contain spillage. Clean up all spills immediately.
Wear protective clothing, gloves, safety glasses and dust respirator.
Use dry clean-up procedures and avoid generating dust.
Sweep up.
Vacuum up or sweep up.
Place in suitable containers for disposal.
Large Spills: Pollutant - contain spillage. Clear area of personnel and move upwind.
Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or waterways.
If contamination of drains or waterways occurs, advise emergency services.
Stop leak if safe to do so.
Increase ventilation.
Avoid generating dust.
Recover uncontaminated product in clean, dry, labeled containers.
Collect residues and seal in labeled drums for disposal.
Wash spill area with large quantities of water.
After clean-up operations, decontaminate and launder all protective clothing and equipment before storing and reusing.
Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
Use good occupational work practices.
Avoid generating and breathing dust.
Avoid contact with skin and eyes.
Wear personal protective equipment when handling.
When handling, DO NOT eat, drink or smoke.
Avoid contact with incompatible materials.
Avoid sources of heat.
Avoid physical damage to containers.
Use in a well-ventilated area.
Keep containers securely sealed when not in use.
Wash hands with soap and water after handling.
Launder contaminated clothing before reuse.
Recommended Storage Methods: Glass container; plastic container.
Plastic drum.
Polylined drum.
Packaging as recommended by manufacturer.
Check that containers are clearly labeled.
Regulatory Requirements: Follow applicable OSHA regulations.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: If inhalation risk exists, wear NIOSH-approved respirator.
Local exhaust ventilation usually required.

Personal Protective Clothing/Equipment

Eyes: Chemical goggles. Full face shield.
Safety glasses with side shields.
Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

Hands/Feet: Impervious gloves; rubber gloves.
Rubber boots.

Respiratory Protection:
Exposure Range >5 to <25 mg/m^3: Supplied Air, Constant Flow/Pressure Demand, Half Mask
Exposure Range 25 to unlimited mg/m^3: Self-contained Breathing Apparatus, Pressure Demand, Full Face
Note: poor warning properties

Other: Eyewash unit. Overalls. Laboratory coat. Rubber apron.

Section 9 - Physical and Chemical Properties

Appearance/General Info: Information applies to the cynaide ion which is a constituent of a number of cyanide compounds.

Physical State: Divided solid
Vapor Pressure (kPa): Negligible
Formula Weight: 26.02
Water Solubility: Soluble in water
pH: Not applicable

Boiling Point Range: Varies
Freezing/Melting Point Range: Varies
Volatile Component (% Vol): Negligible

Section 10 - Stability and Reactivity

Stability/Polymerization: Contact with acids produces toxic fumes.
Sodium cyanide is deliquescent and is gradually decomposed on exposure to air by reaction with carbon dioxide and moisture forming hydrogen cyanide gas.

Storage Incompatibilities: Avoid reaction with oxidizing agents. Avoid strong acids, bases.
Avoid contamination of water, foodstuffs, feed or seed.

Section 11 - Toxicological Information

Unless otherwise specified data extracted from RTECS - Registry of Toxic Effects of Chemical Substances

TOXICITY	IRRITATION
Intraperitoneal (mouse) LD_{50}: 3 mg/kg	Nil reported

See NIOSH, *RTECS* GS 7175000, for additional data.

Section 12 - Ecological Information

Environmental Fate: No data found.
Ecotoxicity: No data found.

Section 13 - Disposal Considerations

Disposal: Recycle wherever possible. Consult manufacturer for recycling options.
Follow applicable federal, state, and local regulations.
Waste solutions can be reacted with ferrous sulfate to form relatively non-toxic ferrocyanide, or reacted with sodium hypochlorite or calcium hypochlorite to form less toxic cyanate.
Caution: Concentrated hypochlorite should not be mixed with concentrated cyanide solutions or solid cyanide because highly toxic cyanogen chloride gas will be released.
Decontaminate empty containers. Puncture containers to prevent reuse.
Bury empty containers at an authorized landfill.

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101):

Shipping Name: CYANIDES, INORGANIC, SOLID, N.O.S.
Hazard Class: 6.1(a)
ID No.: 1588
Packing Group: II
Label: Poison[6]

Additional Shipping Information:

Section 15 - Regulatory Information

EPA Regulations:
RCRA 40 CFR: Listed P030 Toxic Waste
CERCLA 40 CFR 302.4: Listed per RCRA Section 3001 10 lb (4.535 kg)
SARA 40 CFR 372.65: Not listed
SARA EHS 40 CFR 355: Not listed
TSCA: Listed

Section 16 - Other Information

Research Date:.............................1999-11 **Review Date:** 2000-07

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Appendix E

Community Air Monitoring Plan

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

PLAN

Community Air Monitoring Plan

Remedial Investigation

Washington Street Former MGP Site
Binghamton, New York

New York State Electric & Gas Corporation
Binghamton, New York

February 2005

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

Table of Contents

1. Introduction

1.1 General

This *Community Air Monitoring Plan* (CAMP) has been prepared by Blasland, Bouck & Lee, Inc. (BBL) to support the Remedial Investigation (RI) at the former manufactured gas plant (MGP) Site located on Washington Street in Binghamton, New York (the "site"). This CAMP fulfills the requirements set forth by the New York State Department of Health (NYSDOH) *Generic Community Air Monitoring Plan*, dated June 2000 (Attachment A), and the NYSDEC's *Technical and Administrative Guidance Memorandum* (TAGM) 4031, "Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites" (Attachment B). The intent of this CAMP is to provide for a measure of protection of the downwind communities from potential airborne releases of constituents of concern during RI activities. As such, this CAMP specifies the potential air emissions, air monitoring procedures, monitoring schedule and data collection and reporting for the RI activities to be conducted as described below.

1.2 Site Description

The site is located in the City of Binghamton, in Broome County, New York (Figure 1 of RI Work Plan). The former MGP occupies approximately 1.4 acres of land within a city block bounded by Washington Street to the east, Water Street to the west, Susquehanna Street to the north, and Riverside Drive to the south. The site currently includes two, 2-story commercial buildings, associated parking lots, and a residential (apartment) building. One of the two commercial buildings is used by Rexel Electric Supply (formerly Wehle Electric) as an electrical supply warehouse and showroom. This building is scheduled to be demolished in mid-2005 in connection with planned brownfield redevelopment activities. The other commercial building is used by the American Automobile Association (AAA) as an office/travel center. This building is not included in redevelopment plans. The site is presently bounded to the north and south by various commercial buildings and parking lots, to the east by a highway access ramp, and to the west by an industrial property and the Chenango River. The layout of the site and the surrounding area is shown on Figure 2.

1.3 Summary of Selected Site Remedial Investigation Activities

The proposed RI includes soil boring and sampling, test pit excavation, monitoring well/piezometer installation, and groundwater sampling. In addition, if needed, sediment probing and sampling will be performed within the Chenango River. A more detailed description of the investigation activities can be found in the Table 1 of the RI Work Plan.

1.4 Potential Air Emissions Related to Remedial Action Activities

Certain intrusive RI activities to be conducted at the site have the potential to generate localized impacts to air quality including drilling, test pit excavation, and soil sampling. Some non-intrusive RI activities to be conducted may also have the potential to generate impacts to air quality, and include the collection of groundwater samples (and potentially sediment samples).

1.5 Air/Odor Emissions and Control Measures

Air emissions control and fugitive dust suppression techniques will be used during the RI activities identified above, as necessary, to limit the air/odor emissions from the site. Air monitoring for the specific purpose of protecting the community from site activity impacts (and verification thereof) will take place during both intrusive and non-intrusive site activities.

During intrusive and non-intrusive site RI activities (excluding groundwater sampling), odor and dust control measures will be available at the site and used when necessary. The following dust and odor suppression measures may be used during these activities, depending upon specific circumstances and air monitoring results:

- water spray; and
- polyethylene sheeting (for covering drill cuttings, soil/sediment stockpiles, etc.).

Polyethylene sheeting will be used to control nuisance odors and volatile organic compound (VOC) emissions, as needed. Also, dust emissions at the site will be controlled by spraying water on exposed dry surface soil areas (e.g., on test pit excavation faces, soils removed from test pits, stockpiled drill cuttings, etc., as appropriate), through the use of silt fences, and by covering soil stockpiles. Odor and dust control measures will be implemented based on visual or olfactory observations, and the results of airborne particulate and VOC monitoring.

2. Air Monitoring Procedures

2.1 General

Real-time air monitoring will be implemented at the site for VOCs, and particulate matter less than 10 microns in diameter (PM_{10}). A site boundary will be established for the purpose of air monitoring. Upwind and downwind monitoring locations will be determined through visual observation (wind vane, windsock, or similar technique). Monitoring will occur at each sample location and will include the use of hand-held direct-reading survey instruments.

2.2 Sampling Location Selection

Sampling activities will be determined daily based on visual observation of a wind direction. A single upwind location will be selected daily where both VOC and PM_{10} will be recorded. This upwind location will be established at the start of the workday, each day before the start of RI activities. Sampling activities will continue in a downwind direction throughout the day. If wind direction during the workday shifts greater than approximately +/-60 degrees from original upwind, then new upwind and downwind sampling locations will be established. Any location changes will be documented in the field logbook.

2.3 VOCs Monitoring

As required by the NYSDOH guidance for community air monitoring during intrusive activities, VOCs will be monitored continuously during ground intrusive site activities (test pitting and installation of soil borings or monitoring wells) with instrumentation that is equipped with electronic data-logging capabilities. A MiniRAE 2000 (or equivalent) will be used to conduct the real-time VOC monitoring. Attachment C provides detailed information on the MiniRAE 2000. All 15-minute readings will be recorded in the field logbook, as well as any instantaneous readings taken to facilitate activity decisions.

During non-intrusive site activities (collection of soil and sediment samples, collection of groundwater samples from existing monitoring wells), VOCs will be monitored periodically. Periodic monitoring may include monitoring upon arrival at the sample location, monitoring while opening a well cap, monitoring during well bailing and/or purging, and/or monitoring prior to leaving a sample location. However, if a sampling location is near potentially exposed individuals, VOCs will be monitored continuously during sampling activities at that location.

2.4 Particulate Matter Monitoring

As required by the NYSDOH guidance, real-time particulate matter will be monitored continuously during intrusive site activities using instrumentation equipped with electronic data-logging capabilities. A MIE DataRAM (or equivalent) will be used to conduct the real-time PM_{10} monitoring. Attachment C provides detailed information on the MIE DataRAM. All 15-minute readings will be recorded in the field logbook, as well as any instantaneous readings taken to facilitate activity decisions.

Fugitive dust migration will be visually assessed during all work activities, and reasonable dust suppression techniques will be used during any site activities that may generate fugitive dust. These activities and their design controls were discussed previously in Section 1.4 of this plan.

2.5 Action Levels

The action levels provided below are to be used to initiate response actions, if necessary, based on real-time monitoring.

2.5.1 Action Levels for VOCs

As outlined in the NYSDOH guidance document for CAMPs, if the ambient air concentration of total VOCs exceeds 5 parts per million (ppm) above the background (upwind location) for the 15-minute average, intrusive site activities will be temporarily halted while monitoring continues. If the total VOC concentration readily decreases (through observation of instantaneous readings) below 5 ppm above background, then intrusive site activities can resume with continuous monitoring.

If the ambient air concentrations of total VOCs persist at levels in excess of 5 ppm above background but less than 25 ppm above background, intrusive site work activities will be halted, the source of the elevated VOC concentrations identified, corrective actions to reduce or abate the emissions undertaken, and air monitoring will be continued. Once these actions have been implemented, intrusive site work activities can resume provided the following two conditions are met:

- the 15-minute average VOC concentrations remain below 5 ppm above background; and
- the VOC level 200 feet downwind of the sample location or half the distance to the nearest potential receptor or residential/commercial structure (whichever is less but in no case less than 20 feet) is below 5 ppm over background for the 15-minute average.

If the ambient air concentrations of total VOCs are above 25 ppm above background, the intrusive site activities must cease, and emissions control measures must be implemented.

Periodic monitoring for VOCs is required during non-intrusive activities such as collection of soil and sediment samples, or the collection of groundwater samples from existing monitoring wells. If these activities are undertaken at the site, ambient direct-reading (instantaneous) VOC data will be periodically collected at the location of the non-intrusive activity and recorded in the field activity logbooks.

2.5.2 Action Level for PM_{10}

As required by the NYSDOH guidance, if the ambient air concentration of PM_{10} at any one (or more) of the sampling locations is noted at levels in excess of 100 micrograms per cubic meter ($\mu g/m^3$) above the background (upwind location), or if airborne dust is observed leaving the work area, intrusive site activities will be temporarily halted. The source of the elevated PM_{10} concentration is to be identified, corrective actions to reduce or abate the emissions will be undertaken, and air monitoring will continue. Work may continue following the implementation of dust suppression techniques provided the PM_{10} levels do not exceed 150 $\mu g/m^3$ above background.

If, after implementation of dust suppression techniques, PM_{10} levels are greater than 150 $\mu g/m^3$ above background, work must be stopped and site activities must be re-evaluated. Work may only resume provided that the dust suppression measures and other controls are successful in reducing PM_{10} levels less than 150 $\mu g/m^3$ above background and in preventing visible dust from leaving the site.

If the ambient air concentration of PM_{10} is above 150 $\mu g/m^3$ above background, the intrusive site activities must cease and emissions control measures must be implemented.

2.6 Meteorological Monitoring

Wind direction is the only meteorological information considered relevant for the RI activities and CAMP. Meteorological monitoring will be conducted periodically at the site using a windsock, wind vane, or other appropriate equipment. Wind direction will be established at the start of each work day and may be re-established at any time during the work day if a significant shift in wind direction is noted.

2.7 Instrument Calibration

Calibration of the VOC and PM_{10} instrumentation will occur in accordance with each of the equipment manufacturer's calibration and quality assurance requirements. The VOC and PM_{10} monitors will be calibrated at least daily, and calibrations will be recorded in the field activity logbook.

3. Monitoring Schedule and Data Collection and Reporting

3.1 General

The proposed monitoring schedule and data collection and reporting requirements are discussed below.

3.2 Monitoring Schedule

Real-time VOC and PM_{10} monitoring will be performed continuously throughout the remedial action during intrusive site/materials handling activities. VOC monitoring will also be performed during non-intrusive sampling-type activities. Wind direction will be determined at the start of each day and at any other appropriate time during RI activities.

3.3 Data Collection and Reporting

Air monitoring data will be collected continuously from VOC and PM_{10} monitors during intrusive site activities by an electronic data-logging system. The data management software will be set up so that instantaneous observed readings would be recorded by the electronic data acquisition system and averaged over 15-minute time periods. The 15-minute readings and instantaneous readings taken to facilitate activity decisions will be recorded and archived for review by NYSDOH and NYSDEC personnel.

Attachment A

Generic Community Air Monitoring Plan

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

APPENDIX 1A

New York State Department of Health
Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

Attachment B

Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

New York State Department of Environmental Conservation

TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM #4031

FUGITIVE DUST SUPPRESSION AND PARTICULATE MONITORING PROGRAM AT INACTIVE HAZARDOUS WASTE SITES

TO: Regional Hazardous Waste Remediation Engrs., Bur. Directors & Section Chiefs

FROM: Michael J. O'Toole, Jr., Director, Division of Hazardous Waste Remediation

SUBJECT: DIVISION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM -- FUGITIVE DUST SUPRESSION AND PARTICULATE MONITORING PROGRAM AT INACTIVE HAZARDOUS WASTE SITES

DATE: Oct 27,1989

Michael J. O'Toole, Jr. (signed)

1 Introduction

Fugitive dust suppression, particulate monitoring, and subsequent action levels for such must be used and applied consistently during remedial activities at hazardous waste sites. This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2. Background

Fugitive dust is particulate matter--a generic term for a broad class of chemically and physically diverse substances that exist as discrete particles, liquid droplets or solids, over a wide range of sizes--which becomes airborne and contributes to air quality as a nuisance and threat to human health and the environment.

On July 1, 1987, the United States Environmental Protection Agency (USEPA) revised the ambient air quality standard for particulates so as to reflect direct impact on human health by setting the standard for particulate matter less than ten microns in diameter (PM_{10}); this involves fugitive dust whether contaminated or not. Based upon an examination of air quality composition, respiratory tract deposition, and health effects, PM_{10} is considered conservative for the primary standard--that requisite to protect public health with an adequate margin of safety. The primary standards are 150 ug/m^3 over a 24-hour averaging time and 50 ug/m^3 over an annual averaging time. Both of these standards are to be averaged arithmetically.

There exists real-time monitoring equipment available to measure PM_{10} and capable of integrating over a period of six seconds to ten hours. Combined with an adequate fbgitive dust suppression program, such equipment will aid in preventing the off-site migration of contaminated soil. It will also protect both on-site personnel from exposure to high levels of dust and the public around the site from any exposure to any dust. While specifically intended for the protection of on-site personnel as well as the public, this program is not meant to replace long-term monitoring which may be required given the contaminants inherent to the site and its air quality.

3. Guidance

A program for suppressing fugitive dust and monitoring particulate matter at hazardous waste sites can be developed without placing an undue burden on remedial activities while still being protective of health and environment. Since the responsibility for implementing this program ultimately will fall on the party performing the work, these procedures must be incorporated into appropriate work plans. The following fugitive dust suppression and particulate monitoring program will be employed at hazardous waste sites during construction and other activities which warrant its use:

1 Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Such activities shall also include the excavation, grading, or placement of clean fill, and control measures therefore should be considered.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM_{10}) with the following minimum performance standards:

Object to be measured: Dust, Mists, Aerosols
Size range: <0.1 to 10 microns
Sensitivity: 0.001 mg/m^3
Range: 0.001 to 10 mg/m^3
Overall Accuracy: ±10% as compared to gravimetric analysis of stearic acid or reference dust

Operating Conditions:
Temperature: 0 to 40°C
Humidity: 10 to 99% Relative Humidity

Power: Battery operated with a minimum capacity of eight hours continuous operation

Automatic alarms are suggested.

Particulate levels will be monitored immediately downwind at the working site and integrated over a period not to exceed 15 minutes. Consequently, instrumentation shall require necessary averaging hardware to accomplish this task; the P-5 Digital Dust Indicator as manufactured by MDA Scientific, Inc. or similar is appropriate.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the entity operating the equipment to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m^3 over the integrated period not to exceed 15 minutes. While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m^3, the upwind background level must be measured immediately using the same portable monitor. If the working site particulate measurement is greater than 100 ug/m^3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see Paragraph 7). Should the action level of 150 ug/m^3 be exceeded, the Division of Air Resources must be notified in writing within five working days; the notification shall include a description of the control measures implemented to prevent further exceedences.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM_{10} at or above the action level. Since this situation has the potential to migrate contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

    1. Applying water on haul roads.
    2. Wetting equipment and excavation faces.
    3. Spraying water on buckets during excavation and dumping.
    4. Hauling materials in properly tarped or watertight containers.
    5. Restricting vehicle speeds to 10 mph.
    6. Covering excavated areas and material after excavation activity ceases.
    7. Reducing the excavation size and/or number of excavations.

    Experience has shown that utilizing the above-mentioned dust suppression techniques, within reason as not to create excess water which would result in unacceptable wet conditions, the chance of exceeding the 150 **ug/m^3** action level at hazardous waste site remediations is remote. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. If the dust suppression techniques being utilized at the site do not lower particulates to an acceptable level (that is, below 150 **ug/m^3** and no visible dust), work must be suspended until appropriate corrective measures are approved to remedy the situation. Also, the evaluation of weather conditions will be necessary for proper fugitive dust control--when extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended.

There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration **and/or** toxicity may require appropriate toxics monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

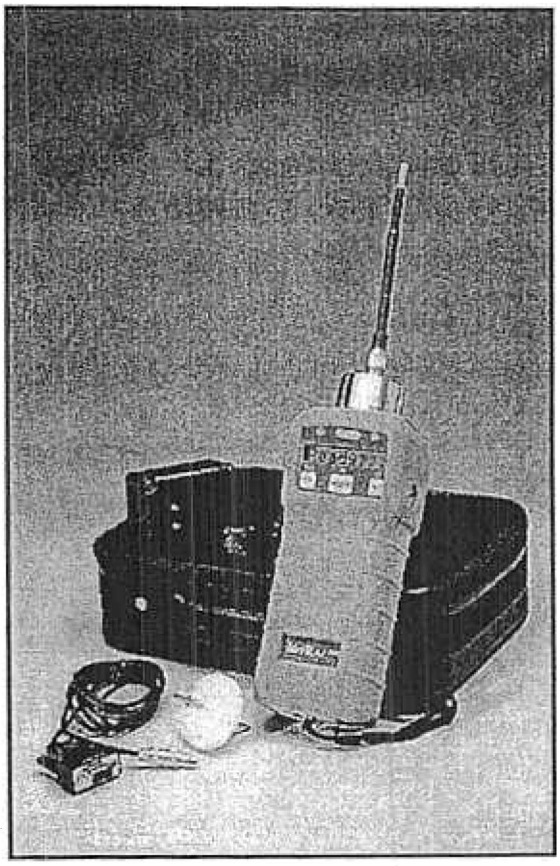
Attachment C

Monitoring Equipment Specifications

BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

MiniRAE 2000
Handheld VOC Monitor

- Intrinsically safe
- Smallest handheld VOC monitor
- Datalogging workhorse



This VOC monitor with PID (photoionization detector) sensor weighs just over one pound, yet it's a heavyweight for leak detection, fugitive emissions monitoring to EPA Method 21 and inspecting leaking underground storage tanks. The MiniRAE 2000 is also a highly useful tool in industrial hygiene applications, including confined space entry, personnel and work place monitoring and for emergency response to hazardous spills. This rugged instrument comes with a belt clip.

With built-in correction factors for more than 100 chemicals, the MiniRAE 2000 provides excellent all-around sensitivity to most VOCs, down to 0.1 ppm. Selectable survey and hygiene modes permit the user to set appropriate alarm thresholds for STEL, TWA and low/high level peak values. Datalogging and custom software.

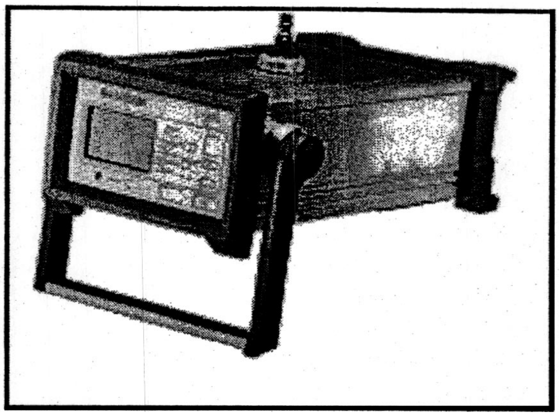
SPECIFICATIONS

Range	Resolution	Response Time	Accuracy
0 to 999 ppm	0.1 ppm	< 3 seconds	± 2 ppm or 10% of reading <2000 ppm
100 to 10,000 ppm	1 ppm	< 3 seconds	± 20% of reading > 2000 ppm
			Calibrated to 100 pprn isobutylene

Sampling Pump	Internal integrated flow rate 400 cc/minute Sample from 100' horizontally or vertically
Datalogging	15,000 points with time/date, header information
Approvals	UL and cUL Class I, Division 1, Groups A, B, C and D, EEx ia IIC T4
Battery	Rechargeable, field changeable NiMH battery pack, 10 hours operation
Dimensions (HWD)	2" x 3" x 8.2"
Weight	19.5 oz

RAE SYSTEMS MiniRAE 2000 PID rents with download cable, zero filter, probe tip, hydrophobic filter, charger, alkaline battery adapter, case and operating manual.

MIE DataRAM Aerosol Monitor
Portable Real-Time Particulate Monitor



- **Real-time measurement of particle concentrations**
- **Datalogging**

The DataRAM aerosol monitor measures concentrations of airborne dust, smoke, mists, haze and fumes with real-time readout. The instrument can be used for exposure sampling of ambient air, continuous unattended monitoring of indoor, duct or process air, as well as environmental and perimeter monitoring. The DataRAM has the widest measurement range of any real-time aerosol monitor — from 0.0001 mg/m^3 to 400 mg/m^3, or a total span of almost seven decades.

OPTIONAL ACCESSORIES
Respirable Cyclone Precollector, for respirable particle monitoring.
Isokinetic Sampling Probe, for isokinetic sampling within ducts.
Temperature Conditioning Heater, for monitoring above 70 percent RH.
Omnidirectional Sampling Inlet, for ambient monitoring under a variety of wind speeds and directions.
PM-10 Inlet Head, for PM-10 or PM-2.5 ambient particulate monitoring.

SPECIFICATIONS

Concentration Measurement Ranges (autoranging)	0.1 to 999.99 pg/m^3, with resolution of 0.1 pg/m^3 1.00 to 39.99 mg/m^3, with resolution of 0.01 mg/m^3 40.0 to 399.9 mg/m^3, with resolution of 0.1 mg/m^3
Accuracy	± 5% of reading ± precision
Particle Sie Range of Maximum Response	0.1 to 10 μm
Sample Flow Rate	1.7 to 2.3 lpm
Datalogging	10,000 data points, with average, minimum and maximum concentrations for each point
Output	RS-232 port
Power	Sealed lead-acid battery, 24 hours operation, or AC operation with adapter
Dimensions (HWD)	5.28" x 7.25" x 13.63"
Weight	11.7 lbs

The MIE DataRAM aerosol monitor rents with an AC adapter/charger, serial download cable, software, filter cassette, soft carrying case and operating manual.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

BROWNFIELD CLEANUP PROGRAM (BCP) APPLICATION

ECL ARTICLE 27, TITLE 14

9/3/04

Applicant Information

NAME New York State Electric & Gas Corporation

ADDRESS P.O. Box 5224

CITY/TOWN Binghamton ZIP CODE 13902-5224

PHONE | FAX | E-MAIL

NAME OF APPLICANT'S REPRESENTATIVE Tracy L. Blazicek. CHMM

ADDRESS Same as above

CITY/TOWN ZIP CODE

PHONE 607-762-8839 | FAX 607-762-8451 | E-MAIL tlblazicek@nyseg.com

THE APPLICANT MUST CERTIFY THAT IT IS EITHER A PARTICIPANT OR VOLUNTEER IN ACCORDANCE WITH ECL § 27-1405 (1) BY CHECKING ONE OF THE BOXES BELOW:

☒ PARTICIPANT
An applicant who either 1) was the owner of the site at the time of the disposal of hazardous waste or discharge of petroleum or 2) is otherwise a person responsible for the contamination, unless the liability arises solely as a result of ownership, operation of, or involvement with the site subsequent to the disposal of hazardous waste or discharge of petroleum.

☐ VOLUNTEER
An applicant other than a participant, including an applicant whose liability arises solely as a result of ownership, operation of or involvement with the site subsequent to the disposal of hazardous waste or discharge of petroleum.

NOTE: By checking this box, the applicant certifies that he/she has exercised appropriate care with respect to the hazardous waste found at the facility by taking reasonable steps to: i) stop any continuing discharge; ii) prevent any threatened future release; and iii) prevent or limit human, environmental, or natural resource exposure to any previously released hazardous waste.

Applicant Relationship to Property (check one):

☐ Previous Owner ☐ Current Owner ☐ Potential /Future Purchaser ☐ Other corporate successor to previous owner

Current Owner/Operator Information

OWNER'S NAME (if different from applicant) This application includes multiple parcels - See Attachment A

ADDRESS

CITY/TOWN ZIP CODE

PHONE | FAX | E-MAIL

OPERATOR'S NAME (if different from applicant)

ADDRESS

CITY/TOWN ZIP CODE

PHONE | FAX | E-MAIL

Site Information

SITE NAME: Washington Street Former MGP Site	
SITE ADDRESS: 24 Water Street & 25 Washington Street	CITY/TOWN: Binghamton, NY — ZIP CODE: 13901
COUNTY: Broome	SITE SIZE (ACRES): 0.39 acres approximately
LATITUDE (degrees/minutes/seconds): 42 ° 05 ' 41 "	LONGITUDE (degrees/minutes/seconds): 75 ° 54 ' 54 "

PLEASE ATTACH A COUNTY TAX MAP WITH IDENTIFIER NUMBERS, ALONG WITH ANY FIGURES NEEDED TO SHOW THE LOCATION AND BOUNDARIES OF THE SITE. ALSO INCLUDE A USGS 7.5 MINUTE QUAD MAP IN WHICH THE SITE IS LOCATED.

1. DO THE SITE BOUNDARIES CORRESPOND TO TAX MAP METES AND BOUNDS? ☐YES ☒NO
   IF NO, PLEASE ATTACH A METES AND BOUNDS DESCRIPTION OF THE SITE. See Attachment B
2. IS THE SITE PART OF A DESIGNATED BROWNFIELD OPPORTUNITY AREA PURSUANT TO GML970-R? IF YES, IDENTIFY AREA (NAME)________ ☐YES ☒NO
3. IS THE SITE PART OF A DESIGNATED EN-Zone PURSUANT TO TL § 21(b)(6)? FOR MORE INFORMATION GO TO: http://www.nylovesbiz.com/Productivity_Energy_and_Environment/BrownField_Redevelopment/default.asp ☒YES ☐NO

   IF YES, IDENTIFY AREA (NAME) Census Tract 001100: Criteria A & B

Applicant Eligibility Information (Please refer to ECL § 27-1407)

1. ARE ANY ENFORCEMENT ACTIONS PENDING AGAINST THE APPLICANT REGARDING THIS SITE? ☐YES ☒NO
2. IS THE APPLICANT SUBJECT TO AN OUTSTANDING CLAIM BY THE SPILL FUND FOR THIS SITE? ☐YES ☒NO
3. HAS THE APPLICANT VIOLATED ANY PROVISION OF ECL ARTICLE 27? ☐YES ☒NO
4. HAS THE APPLICANT BEEN PREVIOUSLY DENIED ENTRY TO THE BCP? ☐YES ☒NO
5. HAS THE APPLICANT COMMITTED A NEGLIGENT OR INTENTIONALLY TORTIOUS ACT REGARDING HAZARDOUS WASTE OR PETROLEUM? ☐YES ☒NO
6. HAS THE APPLICANT BEEN CONVICTED OF A CRIMINAL OFFENSE THAT INVOLVES A VIOLENT FELONY, FRAUD, BRIBERY, PERJURY, THEFT, OR OFFENSE AGAINST PUBLIC ADMINISTRATION? ☐YES ☒NO
7. HAS THE APPLICANT KNOWINGLY FALSIFIED STATEMENTS OR CONCEALED MATERIAL FACTS IN A MATTER RELATED TO THE DEPARTMENT? ☐YES ☒NO
8. HAS THE APPLICANT, BASED ON THE PROVISIONS OF ECL ARTICLE 27-1407 (OR A SIMILAR PROVISION OF FEDERAL OR STATE LAW), COMMITTED AN ACT OR FAILED TO ACT, AND SUCH ACT OR FAILURE TO ACT COULD BE THE BASIS FOR DENIAL OF A BCP APPLICATION? ☐YES ☒NO

Site Eligibility Information (Please refer to ECL § 27-1405)

1. DOES THE SITE MEET THE DEFINITION OF A BROWNFIELD SITE (REAL PROPERTY, THE REDEVELOPMENT OR REUSE OF WHICH MAY BE COMPLICATED BY THE PRESENCE OR POTENTIAL PRESENCE OF A HAZARDOUS WASTE, PETROLEUM, POLLUTANT, OR CONTAMINANT)? ☒YES ☐NO
2. IS THE SITE LISTED ON THE NATIONAL PRIORITIES LIST? ☐YES ☒NO
3. IS THE SITE LISTED ON THE NYS REGISTRY OF INACTIVE HAZARDOUS WASTE DISPOSAL SITES? ☐YES ☒NO
   IF YES, PLEASE PROVIDE: SITE #________ CLASS #________
4. IS THE SITE SUBJECT TO A PERMIT UNDER ECL ARTICLE 27, TITLE 9, OTHER THAN AN INTERIM STATUS FACILITY" ☐YES ☒NO
5. IS THE SITE SUBJECT TO A CLEANUP ORDER UNDER NAVIGATION LAW ARTICLE 12 OR ECL ARTICLE 17 TITLE 10? ☐YES ☒NO
6. IS THE SITE SUBJECT TO A STATE OR FEDERAL ENFORCEMENT ACTION RELATED TO HAZARDOUS WASTE OR PETROLEUM? ☐YES ☒NO

Project Description

PLEASE ATTACH A DESCRIPTION OF THE PROJECT WHICH INCLUDES THE FOLLOWING COMPONENTS:

- PURPOSE AND SCOPE OF THE PROJECT
- ESTIMATED PROJECT SCHEDULE

See Attachment C

Site's Environmental History

TO THE EXTENT THAT EXISTING INFORMATION/STUDIES/REPORTS ARE AVAILABLE TO THE APPLICANT, PLEASE ATTACH THE FOLLOWING:

1. ENVIRONMENTAL DATA
   A PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT PREPARED IN ACCORDANCE WITH ASTM E 1527 (American Society for Testing and Materials: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process), AND ALL ENVIRONMENTAL REPORTS RELATED TO CONTAMINANTS ON OR EMANATING FROM THE SITE.
   IF A FINAL INVESTIGATION REPORT IS INCLUDED, INDICATE WHETHER IT MEETS THE REQUIREMENTS OF ECL ARTICLE 27-1415(2):
   ☐ YES ☐ NO N/A
2. OWNERS
   A LIST OF PREVIOUS OWNERS WITH NAMES; LAST KNOWN ADDRESSES AND TELEPHONE NUMBERS (DESCRIBE APPLICANT'S RELATIONSHIP, IF ANY, TO EACH PREVIOUS OWNER LISTED. IF NO RELATIONSHIP, PUT "NONE"). See Attachment D
3. OPERATORS
   A LIST OF PREVIOUS OPERATORS WITH NAMES, LAST KNOWN ADDRESSES AND TELEPHONE NUMBER (DESCRIBE APPLICANT'S KELATIONSHIP, IF ANY, TO EACH PREVIOUS OPERATOR LISTED. IF NO RELATIONSHIP, PUT "NONE"). See Attachment D

Contact List Information

PLEASE A'ITACH, AT A MINIMUM, THE NAMES AND ADDRESSES OF THE FOLLOWING: .See Attachment E

1. THE CHIEF EXECUTIVE OFFICER AND ZONING BOARD CHAIRPERSON OF EACH COUNTY, CITY, TOWN AND VILLAGE IN WHICH THE SITE IS LOCATED.
2. RESIDENTS, OWNERS, AND OCCUPANTS OF THE SITE AND PROPERTIES ADJACENT TO THE SITE. See Attachment E-1
3. LOCAL NEWS MEDIA FROM WHICH THE COMMUNITY TYPICALLY OBTAINS INFORMATION.
4. THE PUBLIC WATER SUPPLIER WHICH SERVICES THE AREA IN WHICH THE SITE IS LOCATED.
5. ANY PERSON WHO HAS REQUESTED TO BE PLACED ON THE SITE CONTACT LIST.
6. THE ADMINISTRATOR OF ANY SCHOOL OR DAY CARE FACILITY LOCATED ON OR NEAR THE SITE.
7. THE LOCATION OF A DOCUMENT REPOSITORY FOR THE PROJECT (E.G., LOCAL LIBRARY)

Contaminant Information

INDICATE KNOWN OR SUSPECTED CONTAMINANTS AND THE MEDIA WHICH ARE KNOWN OR SUSPECTED TO HAVE BEEN AFFECTED:

Contaminant Category	Soil	Groundwater	Surface Water	Sediment	Soil Gas
Petroleum					
Chlorinated Solvents					
Other VOCs	X	X			
SVOCs	X	X			
Metals	X	X			
Pesticides					
PCBs					
Other*	X	X			

*Please describe: MGP purifier box waste

Land Use Factors (Please refer to ECL § 27-1415(3))

Current Use: ☐ Residential ☒ Commercial ☐ Industrial ☐ Other

Future Use: ☐ Residential ☒ Commercial ☐ Industrial ☐ Other

Please check the appropriate boxes and provide an explanation as an attachment if appropriate.

	Yes	No	Unknown
1.Do current historical and/or recent development patterns support the proposed use?	☒	☐	☐
2. Is the proposed use consistent with applicable zoning laws/maps?	☒	☐	☐

3. Is the proposed use consistent with applicable brownfield opportunity area designations? (See GML 970-r)	[ ]	[X]	[ ]
4. Is the proposed use consistent with applicable comprehensive community master plans, local waterfront revitalization plans, other adopted land use plans?	[X]	[ ]	[ ]
5. Are there any Environmental Justice Concerns? (See §27-1415(3)(p)).	[ ]	[X]	[ ]
6. Are there any federal or State land use designations relating to this site?	[ ]	[X]	[ ]
7. Do the population growth patterns and projections support the proposed use?	[X]	[ ]	[ ]
8. Is the site accessible to existing infrastructure?	[X]	[ ]	[ ]
9. Are there important cultural resources, including federal or state historic or heritage sites or Native American religious sites proximate to the site?	[ ]	[X]	[ ]
10. Are there important federal, state or local natural resources, including waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species proximate to the site?	O		q
11. Are there floodplains proximate to the site?	[ ]	[X]	[ ]
12. Are there any institutional controls currently applicable to the site?	[ ]	[X]	[ ]
13. Describe on attachment the proximity to real property currently used for residential use, and to urban, commercial, industrial, agricultural, and recreational areas. See Attachment F			
14. Describe on attachment the potential vulnerability of groundwater to contamination that might migrate from the site, including proximity to wellhead protection and groundwater recharge areas. See Attachment G			
15. Describe on attachment the geography and geology of the site. See Attachment H			
(Note: the 16" criteria relates to comments from the public, which would not be received at the time of application)			

Statement of Certification

(By applicant who is an individual)
I hereby affirm that information provided on this form and its attachments is true and complete to the best of my knowledge and belief. I am aware that any false statement made herein is punishable as a Class A misdemeanor pursuant to section 210.45 of the Penal Law.

Date: __________ Signature: ______________________ Print Name: ______________________

(By an applicant other than an individual)
I certify that I am Manager - SIR (title) of NYSEG (entity); that I am authorized by that entity to make this application; that this application was prepared by me or under my supervision and direction; and that information provided on this form and its attachments is true and complete to the best of my knowledge and belief. I am aware that any false statement made herein is punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Date: 2/24/05 Signature: Joseph M. Simone Print Name: Joseph M. Simone

SUBMITTAL INFORMATION:

Three (3) complete copies are required.

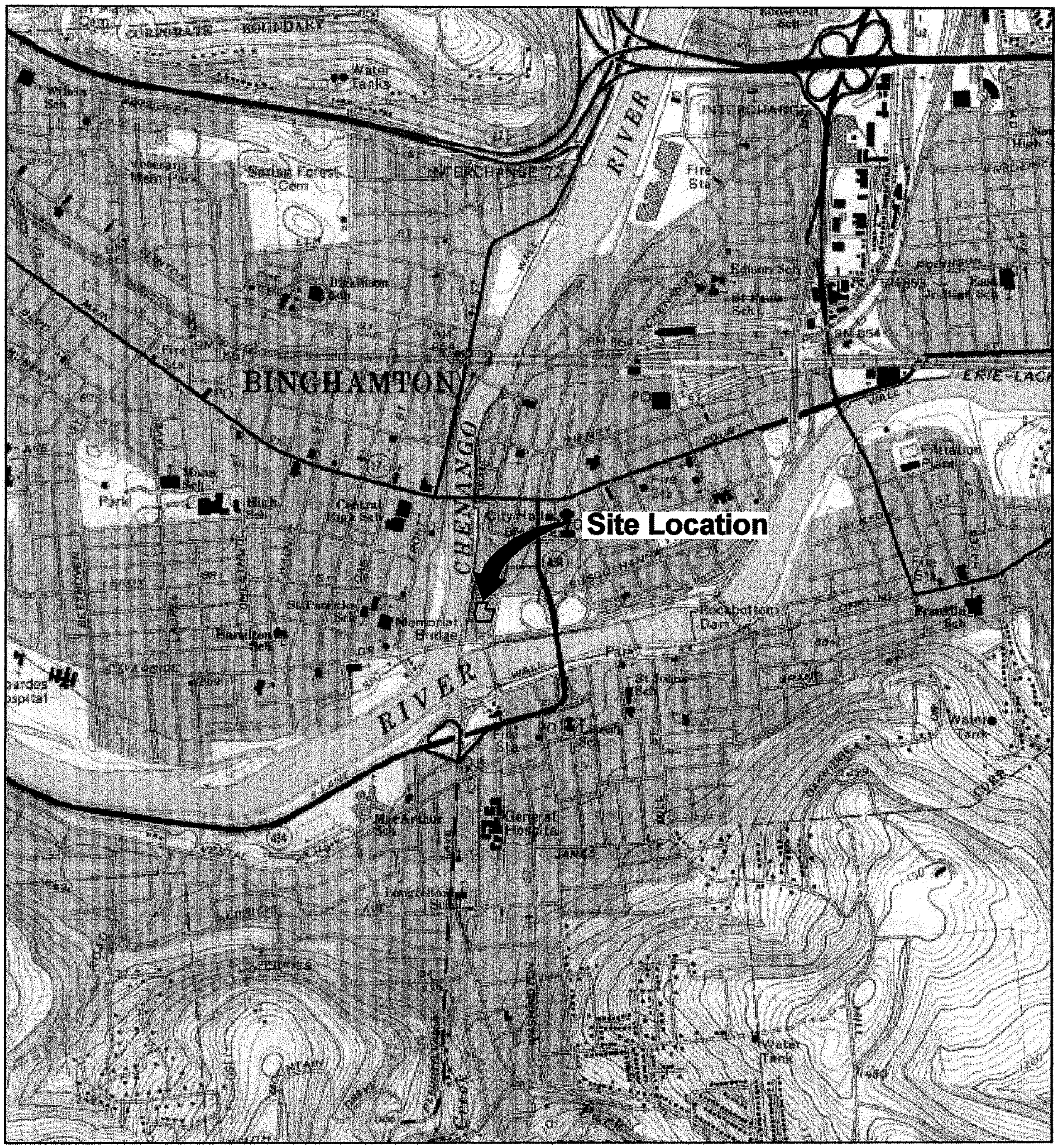
- **Two** (2) copies, one hard copy with original signatures and one electronic copy in Portable Document Format (PDF) on a CD or diskette, must be sent to:

  Chief, Site Control Section
  New York State Department of Environmental Conservation
  Division of Environmental Remediation
  625 Broadway
  Albany, NY 12233-7020

- **One (1)** hard copy must be sent to the DEC regional contact in the regional office covering the county in which the site is located. Please check our website for the address of our regional offices: http://www.dec.state.ny.us/website/der/index.html

FOR DEPARTMENT USE ONLY

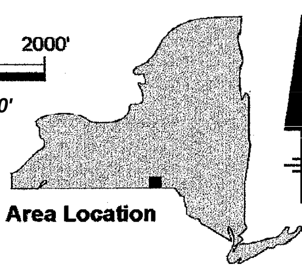
BCY SITE NO: ______________ **BCP SITE T&A CODE:** ______________ **PROJECT MANAGER:** ______________________



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., BINGHAMTON, NY, 1968, PHOTOINSPECTED 1976.

2000' 0 2000'

Approximate Scale: 1" = 2000'



Area Location

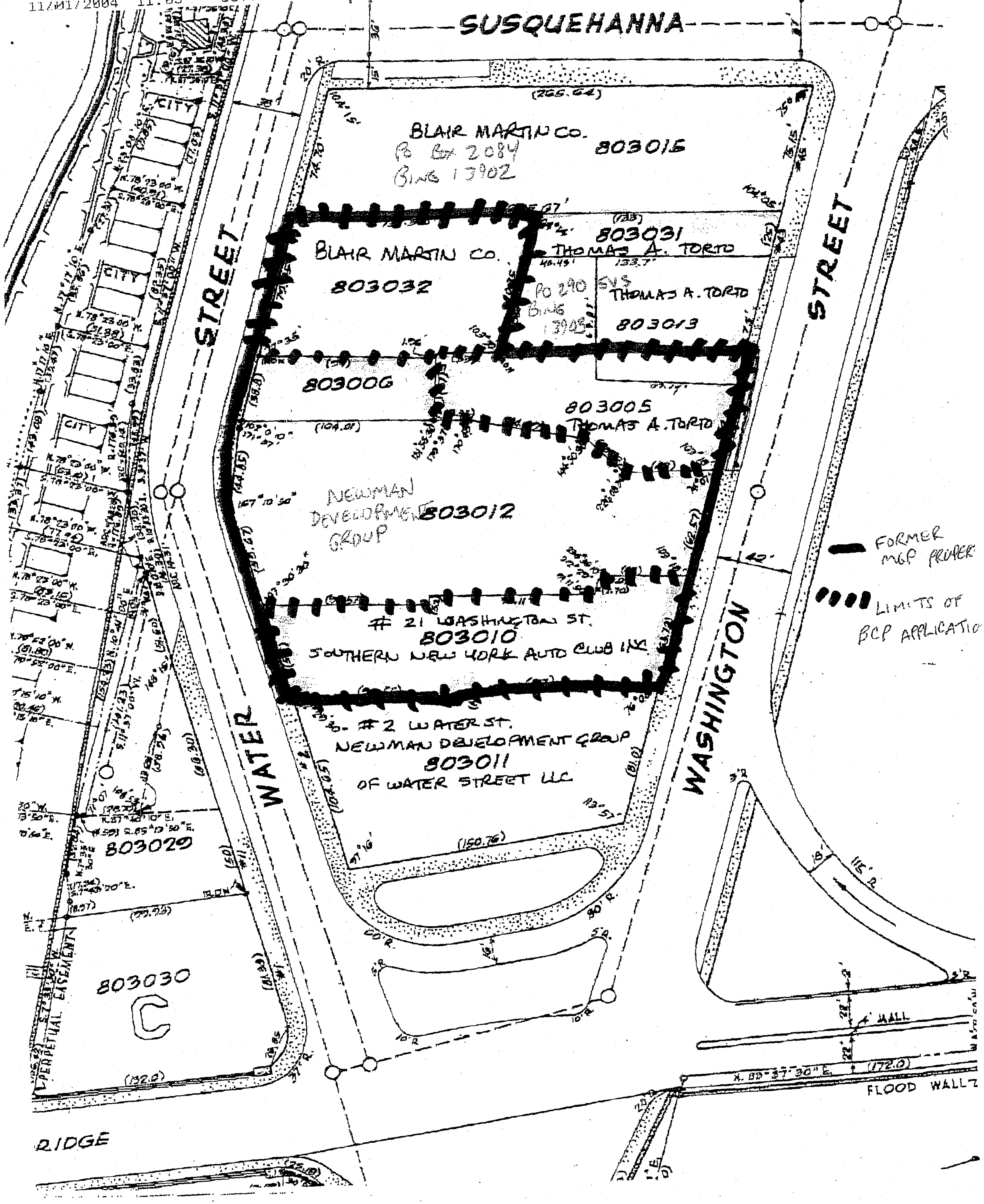
NEW YORK STATE ELECTRIC & GAS CORPORATION
BINGHAMTON FORMER MGP SITE
BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION

SITE LOCATION MAP

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

FIGURE
1

02/07/05 SYR-D85-DJH
13055002/13055n01 cdr


SUSQUEHANNA
BLAIR MARTIN CO.
PO BOX 2084
BING 13902
803015
803031
THOMAS A. TORTO
BLAIR MARTIN CO.
803032
PO 290 SVS
BING 13905
THOMAS A. TORTO
803013
803006
803005
THOMAS A. TORTO
NEWMAN
DEVELOPMENT
GROUP
803012
#21 WASHINGTON ST.
803010
SOUTHERN NEW YORK AUTO CLUB INC
#2 WATER ST.
NEWMAN DEVELOPMENT GROUP
803011
OF WATER STREET LLC
WATER
STREET
WASHINGTON
STREET
CITY
CITY
CITY
803029
803030
C
PERPETUAL EASEMENT
RIDGE
FLOOD WALL
FORMER MGP PROPER
LIMITS OF BCP APPLICATIO

ATTACHMENT A

Current Owner/Operator

<u>Parcel 803005</u>

Thomas A. Torto
PO Box 290, SVS
Binghamton, NY 13903

<u>Parcel 803013</u>

Thomas A. Torto
PO Box 290, SVS
Binghamton, NY 13903

<u>Parcel 803032</u>

Blair Martin, Co
PO Box 2084
Binghamton, NY 13902

<u>Parcel 803010</u>

Southern New York Auto Club, Inc.
21 Washington Street
Binghamton, NY 13901

Note that the former MGP site is currently comprised of all or part of six (6) separate parcels of land. NYSEG's Brownfield Cleanup Program (BCP) application is intended to include all or part of the four (4) parcels listed above. A separate BCP application will be filed by another party for the remaining two (2) parcels of the former MGP site (i.e. parcels 803012 and 803006).

ATTACHMENT B

Metes & Bounds Description

All of that tract or parcel of land described as follows:

Beginning at a point in the west line of Washington Street 29.9 feet southerly from the southeast comer of Lot No. 1 as laid down on a map of the Gas Company's Property recorded in Broome County Clerk's Office in Book of Maps No. 1 at page 181; running thence at an interior angle of 105° 53' with the west line of Washington Street a distance of 50.37 feet to a point; thence northwestwardly on a line making an interior angle of 133° 51' 30" a distance of 28.15 feet to a point; thence westwardly with an interior angle of 215° 09' 30" a distance of 64.89 feet to a point; thence westwardly on a line making an interior angle of 189° 12' a distance of 13.55 feet to a point; thence westwardly making an interior angle of 180° 03' a distance of 5.73 feet to a point; thence northwardly 35 feet, more or less, to a point; thence running westwardly a distance of 96.8 feet to a point in the west line of Water Street; thence running north along the easterly line of Water Street making an interior angle of 77" 40' a distance of 79.35 feet to a point. Said point being a distance of 74.70 feet, as measured along the easterly line of Water Street, from the south line of Susquehanna Street. Thence running eastwardly a distance of 131.5 feet, more or less, to a point; thence running southwardly making an interior angle of 75" 46', more or less, about 75 feet to a point; thence running eastwardly about 135 feet to the west line of Washington Street; thence running southwardly with an interior angle of 75° 51' along the west line of Washington Street a distance of 76.05 feet to the point or place of beginning;

As well as all of that tract or parcel of land described as follows:

ALL THAT TRACT OR PARCEL OF LAND situate in the City of Binghamton, County of Broome and State of New York, bounded and described as follows: Being a lot known and designated as Lot No. Five (5), as said lot is laid down on a map of "Gas Property on Washington and Water Streets", which map was recorded in Broome County Clerk's Office in Book No. 1 of Maps at page 181. Said lot is situate on the east side of Water Street and is bounded on the west by said Water Street; on the south by the lands now or formerly of William F. Young; on the north by the lot designated as Lot No. Four (4) on said map; said lot hereby conveyed is fifty (50) feet front as measured on said Water Street, and is forty-eight (48) feet wide in the rear, and is ninety-five (95) feet deep on the south line, and about one hundred and eight (108) feet deep on the north line, be the said several dimensions more or less, and being a portion of the premises heretofore known as the Binghamton Gas Works Property.

EXCEPTING AND RESERVING THEREFROM, ALL THAT TRACT OR PARCEL OF LAND, situate in the City of Binghamton, County of Broome and State of New York, bounded and described as follows: Beginning at an iron set in the easterly line of Water Street at the northwesterly comer of lands heretofore conveyed by William

Pundis and wife to Crane Co. by deed dated November 30, 1928, and recorded in Book 382 of Deeds at page 512; thence easterly along the northerly line of the said lands conveyed to Crane Co. by William Pundis and wife, a distance of 92.19 feet to a point; thence southerly making an interior angle of 90" 00', a distance of 5.22 feet to a point; thence westwardly and parallel with the said northerly line of the said lands so conveyed to Crane Co. making an interior angle of 90° 00', a distance of 90.57 feet to a point in the easterly line of Water Street 5.47 feet southerly from the point or place of beginning; thence northwardly along the easterly line of Water Street making an interior angle of 107° 30' 30", a distance of 5.47 feet to the point or place of beginning, the last mentioned course making an interior angle of 72° 29' 30" with the first mentioned course. Being a strip of land along the north line of the parcel heretofore conveyed by William Pundis and wife to Crane Co. by deed dated November 30, 1928, and recorded in Book 382 of Deeds at page 512, and estimated to contain 477 square feet of land, be the same more or less.

ATTACHMENT C

Purpose and s(of the project:

Investigation and remediation to allow future restricted commercial use consistent with existing zoning and land use plans.

Schedule:

Submit BCP application and work plan: February 25, 2005

45-day comment period concludes: April 12, 2005

Initiate fieldwork exclusive of that within the footprint of Rexel building: May 2, 2005

Initiate fieldwork in footprint of former Rexel building (assumes NDG razes building immediately after Rexel vacates): October 15, 2005

Submit draft remedial investigation report to DEC: February 28, 2006

Site remediation: dependent on DEC review of draft RI report and Newman Development Group project needs.

ATTACHMENT D

Previous owners*

1856- 1887	Binghamton Gas Light Company
1887 – 1888	Binghamton Gas and Electric Co.
Pre-1918 - ?	Larrabee-Deyo Motor Truck Co., Inc.
11/1/27	Parcel 2 acquired by Charles E. Titchener (fiom Larrabee-Deyo)
5/22/29	Parcel **3** acquired by Charles E. Titchener (fiom Crane Co.)
12/22/53	Parcels 2 & **3** bequeathed by Charles E. Titchener to his estate
2/17/54	Parcel 1 acquired by Mary Evelyn Burton (fiom Blanche Keefe)
4/1/54	Parcels 2 & **3** acquired by AERR Co., Inc. (from Norman A. Boyd, Executor)
8/3/66	Parcel 1 acquired by Mary Evelyn Burton and Blanche Keefe (from Mary Evelyn Burton)
9/8/76	Parcel 1 acquired (from Mary Evelyn Burton) by Wehle Electric Co., Inc.
1/19/77	Parcels 2 & **3** combined (as AERR merges with Wehle Electric)
9/28/90	Parcels 1, 2, & **3** acquired by Westbourne Supply Inc., (from Wehle Electric) and combined
6/15/01	Parcels 1, 2, & **3** acquired by Southern Electric Supply Company, Inc. (from Westbourne Supply Inc.)
10/04	Parcels 1, 2, & **3** acquired by Washington Street Associates, LLC (from Southern Electric Supply Company, Inc.)

* Refer to the attached figure for a depiction of parcels 1, 2, & **3.**

Previous Operators

Binghamton Gas Light Company 1885-1887

Binghamton Gas and Electric Co. 1887-1888

Larrabee-Deyo Motor Truck Co.	pre 1918- 1927
Crane Co.	?-1929 (Parcel 3)
AERR Co., Inc.	1954-1977 (Parcels 2 & 3)
Wehle Electric Co., Inc.	1976 (Parcel 1) , 1977-1990 (Parcels 2&3)
Westbourne Supply Inc.	1990-2001
Southern Electric Supply Co., Inc.	2001-current

ATTACHMENT E

Contact List Information

1 **Zoning Board Chairperson**

City of Binghamton Zoning Board of Appeals
Alex Roberts, Chairman
38 Hawley Street
Binghamton, NY 13901

County CEO

Barbara Fiala – County Executive
PO Box 1766
Binghamton, NY 13902-1766

City CEO

Richard Bucci – Mayor
38 Hawley Street
Binghamton, NY 13901

2. **Residents, Owners and Occupants of the Site and Adjacent Properties**
See attachment E-1

3. **Local News Media**

Clear Channels Radio
320 Jensen Road
Vestal, New York 13850

FAX: 584-5900
Phone: 584-5800
Email: NewsChannel34@NewsChannel34.com
(no email address directly to newsroom)

Affiliated Radio Stations:

WMRV
WMXW
WKGB
WBBI
WENE
WINR

Citadel Radio
59 Court Street
Binghamton, New York 13901

FAX: 772-9806
Phone: 772-8850
Email: bernie@wnbf.com

Affiliated Radio Stations:

WAAL
WHWK
WWYL
WYOS
WNBF

Television Stations

WBGH/WIVT (NBC/ABC)
203 Ingraham Hill Road
Binghamton, NY 13903

FAX: 723-6403
Phone: 771-3434
Email: newschannel34@newschannel34.com

WBNGWBXI (CBS)
560 Columbia Drive
Johnson City, New York 13790

FAX: 729-4022
Phone: 729-8812
Email: calkins@,wbngtv.com

WICZ (Fox 40)
4600 Vestal Parkway E.
Vestal, New York 13850

FAX: 770-7550
Phone: 770-4040
Email: FOX40@wicz.com

WSKG (Channel 46)
501 Gates Road
Vestal, New York 13850

FAX: 729-7328
Phone: 729-0100
Email: mail@wskg.pbs.org

Newspapers

Press & Sun Bulletin
4421 Vestal Parkway East, Vestal, NY 13850
P.O. Box 1270
Vestal, NY 13902

FAX: 798-1113
Phone: 798-1234
Email: rocker@pressconnects.com
jmicale@pressconnects.com
dschneier@pressconnects.com
lmiller@pressconnects.com
jplatsky@pressconnects.com

4. Water Supplier Serving the Area

City of Binghamton
Department of Public Works
Louis J. Kelly, Commissioner
38 Hawley Street
Binghamton, NY 13901

5. Name of Any Person Who Requested to be Placed on the Site Contact List

See attachment D-1

6. **Administrator of any school or day care facility located on or near the site.**

Not applicable – no schools or day care facility on or near the site.

7. Location of Document Repository for the Project

Broome County Public Library
185 Court Street
Binghamton, NY 13901

ATTACHMENT E-1

Mark P Callahan
or Current Resident
11 Water St.
Binghamton, NY 13901

Current Resident
1 Water St.
Binghamton, NY 13901

City of Binghamton
38 Hawley St.
Binghamton, NY 13901

Thomas A. Torto
P.O. Box 290 SVS
Binghamton, NY 13903

Current Resident
43 Washington St.
Binghamton, NY 13903

Blair Martin Co
P.O. Box 2084
Binghamton, NY 13902

Current Resident
40 Water St.
Binghamton, NY 13901

Current Resident
35 Washington St.
Binghamton, NY 13901

Southern Electric Supply
Company Inc.
PO Box 610026
Dallas, TX 75261

Current Resident
38 Water St.
Binghamton, NY 13901

Southern New York Auto Club Inc.
or Current Resident
21 Washington St.
Binghamton, NY 13901

Current Resident
21 Washington St.
Binghamton, NY 13901

Newman Development Group
of Water Street LLC
3101 Shippers Rd.
Vestal, NY 13850

Current Resident
2 Water St.
Binghamton, NY 13901

Current Resident
31 Washington St.
Binghamton, NY 13901

Current Resident
37 Washington St.
Binghamton, NY 13901

Current Resident
45 Washington St.
Binghamton, NY 13901

Woodburn Court Associates
P.O. Box 547
Jenkintown, PA 19046

Current Resident
21 Exchange St.
Binghamton, NY 13901

County of Broome
40 Hawley St.
Binghamton, NY 13901

Current Resident
60 Hawley St.
Binghamton, NY 13901

Broome County Young
Men's Christian Assoc.
61 Susquehanna St.
Binghamton, NY 13901

City of Binghamton
Claims Unit – Div -FISC
P.O. Box 2117
Albany, NY 12220

Current Resident
44 Hawley St.
Binghamton, NY 13901

City of Binghamton
or Current Resident
38 Hawley St.
Binghamton, NY 13901

Marianne King
203 Patio Dr.
Endwell, NY 13760

Current Resident
28 Isbell St.
Binghamton, NY 13901

Broome County Government
P.O. Box 1766
Binghamton, NY 13902

Current Resident
92 Court St.
Binghamton, NY 13901

Binghamton Housing Authority
45 Exchange St.
P.O. Box 19
Binghamton, NY 13901

Current Resident
25 Exchange St.
Binghamton, NY 13901

Current Resident
66 Hawley St.
Binghamton, NY 13901

YWCA
or Current Resident
74 Exchange St.
Binghamton, NY 13901

Current Resident
74 Hawley St.
Binghamton, NY 13901

19 Chenango Street Inc.
19 Chenango St.
Binghamton, NY 13901

Current Resident
84 Court St.
Binghamton, NY 13901

Michael J. Weber
or Current Resident
78 Court St.
Binghamton, NY 13901

L.L.C.
4164 Lisi Ln
Binghamton, NY 13903

Current Resident
80 Court St.
Binghamton, NY 13901

Current Resident
82 Court St.
Binghamton, NY 13901

City of Binghamton
38 Hawley St.
Binghamton, NY 13901

Current Resident
72 Court St.
Binghamton, NY 13901

Binghainton Associates, L.L.C.
1424 State St.
Sarasota FL 34236

Current Resident
92 State St.
Binghamton, NY 13901

Binghamton Urban
Renewal Agency
38 Hawley St.
Binghamton, NY 13901

Current Resident
90 State St.
Binghamton, NY 13901

Current Resident
88 State St.
Binghamton, NY 13901

Current Resident
86 State St.
Binghamton, NY 13901

Current Resident
82 State St.
Binghamton, NY 13901

City of Binghamton
Director of Finance
38 Hawley St.
Binghamton, NY 13901

Current Resident
69 Collier St.
Binghamton, NY 13901

Current Resident
80 State St.
Binghamton, NY 13901

Development L.L.C
15 West Main St.
Owego, NY 13827

Current Resident
60 Court St.
Binghamton, NY 13901

Arena Hotel Corp.
or Current Resident
2 Hawley St.
Binghamton, NY 13901

L.L.C
80 NE 168 St.
North Miami Beach, FL 33162

Current Resident
2 Court St.
Binghamton, NY 13901

William T. Mantas
or Current Resident
89 State St.
Binghamton, NY 13901

Stephens Square, L.L.C
520 Columbia Dr.
Johnson City, NY 13790

Current Resident
81 State St.
Binghamton, NY 13901

Bearcats Development
Group, L.L.C.
73-75 State St.
Binghamton, NY 13901

Current Resident
77 State St.
Binghamton, NY 13901

Frederick J. Meagher, Jr. &
Sherwood Walls
or Current Resident
15 Hawley St.
Binghamton, NY 13901

William E. & Patricia C. Tabeek
13 S. Willis Ave.
Endwell, NY 13760

Current Resident
114 Washington St.
Binghamton, NY 13901

The Garland, L.L.C.
or Current Resident
116 Washington St.
Binghamton, NY 13901

Mary Puglisi
33 Fayette St.
Binghamton, NY 13901

Current Resident
118 Washington St.
Binghamton, NY 13901

Eugene Beautz &
Robert W. Williams
120 Washington St.
Binghamton, NY 13901

Current Resident
122 Washington St.
Binghamton, NY 13901

City of Binghamton
38 Hawley St.
Binghamton, NY 13901

Current Resident
124 Washington St.
Binghamton, NY 13901

Margaret M. Martin
884 Powderhouse Rd.
Binghamton, NY 13903

Current Resident
128 Washington St.
Binghamton, NY 13901

Eugene Beautz, Richard Kendrot &
Robert Williams
132 Washington St.
Binghamton, NY 13901

Current Resident
130 Washington St.
Binghamton, NY 13901

Current Resident
132 Washington St.
Binghamton, NY 13901

Patricia Johnson
RR1 Box 1870A
Friendsville, PA 18818

Current Resident
136 Washington St.
Binghamton, NY 13901

T & R Realty Corp.
123 Lake St.
Elmira, NY 14901

Current Resident
138 Washington St.
Binghamton, NY 13901

Current Resident
140 Washington St.
Binghamton, NY 13901

Avelina B. Torres and
R. Lambert
180-16 Wexford Terr - Apt 5A
Jamaica Estates, NY 11432

Current Resident
146 Washington St.
Binghamton, NY 13901

Ronald Sall, Inc.
2332 Oswego St.
Binghamton, NY 13903

Current Resident
52 Court St.
Binghamton, NY 13901

Cheng's Realty Corp.
PO Box 3216
Binghamton, NY 13902

Current Resident
58 Court St.
Binghamton, NY 13901

Chun Lin
24 Williams St.
Kirkwood, NY 13795

Current Resident
48 Court St.
Binghamton, NY 13901

Binghamton Downtown Properties,
L.L.C.
1155 Warburton Ave. - Apt 1R
Yonkers, NY 10701

Current Resident
143 Washington St.
Binghamton, NY 13901

Nehoc Realty Corporation
138 Front St.
Binghamton, NY 13905

Current Resident
137 Washington St.
Binghamton, NY 13901

David Carver
or Current Resident
135 Washington St.
Binghamton, NY 13901

Salvation Army
or Current Resident
127 Washington St.
Binghamton, NY 13901

L.F. Hamlin, Inc.
CVS #561
P.O. Box 4900
Scottsdale, AZ 85261

Current Resident
125 Washington St.
Binghamton, NY 13901

Binghamton Urban
Renewal Agency
38 Hawley St.
Binghamton, NY 13901

Current Resident
121 Washington St.
Binghainton, NY 13901

Current Resident
119 Washington St.
Binghamton, NY 13901

Current Resident
117 Washington St.
Binghamton, NY 13901

Current Resident
115 Washington St.
Binghamton, NY 13901

Current Resident
113 Washington St.
Binghamton, NY 13901

Current Resident
111 Washington St.
Binghamton, NY 13901

Current Resident
109 Washington St.
Binghamton, NY 13901

Current Resident
7 Hawley St.
Binghamton, NY 13901

Current Resident
5 Hawlcy St.
Binghamton, NY 13901

Current Resident
124 Water St.
Binghamton, NY 13901

Current Resident
82 Water St.
Binghamton, NY 13901

Current Resident
69 Washington St.
Binghamton, NY 13901

Current Resident
67 Washington St.
Binghamton, NY 13901

Current Resident
61 Washington St.
Binghamton, NY 13901

Current Resident
79 State St.
Binghamton, NY 13901

Current Resident
43 Water St.
Binghamton, NY 13901

Bache Building Management Co.
P.O. Box F 1706
Binghamton, NY 13901

Current Resident
71 State St.
Binghamton, NY 13901

Bearcats Development
Group, L.L.C
584 Upper Court St.
Binghamton, NY 13904

Current Resident
73 State St.
Binghamton, NY 13901

Current Resident
75 State St.
Binghamton, NY 13901

Current Resident
73 Water St.
Binghamton, NY 13901

Current Resident
128 Water St.
Binghamton, NY 13901

Current Resident
130 Water St.
Binghamton, NY 13901

L. F. Hamlin, Inc.
1 CVS Dr.
Woodsocket, RI 02895

Current Resident
134 Water St.
Binghamton, NY 13901

Current Resident
142 Water St.
Binghamton, NY 13901

Penncourt Realty Corp.
84 Court St.
Binghamton, NY 13901

Current Resident
1 Hawley St.
Binghamton, NY 13901

Current Resident
34 Court St.
Binghamton, NY 13901

Current Resident
36 Court St.
Binghamton, NY 13901

Beverly H. Smith &
L. M. Hamlin, Jr.
Lincoln First Bk
P.O. Box 4900
Scottsdale, AZ 85261

Current Resident
38 Court St.
Binghamton, NY 13901

Court Street Commons, L.L.C.
59 Court St.
Binghamton, NY 13901

Current Resident
40 Court St.
Binghamton, NY 13901

Cheng Properties Corp.
P.O. Box 3216
Binghamton, NY 13902

Current Resident
44 Court St.
Binghamton, NY 13901

Satra Realty, L.L.C.
93-16 71st Dr.
Forest Hills, NY 11375

Current Resident
20 Hawley St.
Binghamton, NY 13901

County of Broome
40 Hawley St.
Binghamton, NY 13901

Current Resident
10 Stuart St.
Binghamton, NY 13901

Current Resident
83 Water St.
Binghamton, NY 13901

Current Resident
75 Water St.
Binghamton, NY 13901

Current Resident
77 Water St.
Binghamton, NY 13901

Current Resident
65 Water St.
Binghamton, NY 13901

Current Resident
49 Water St.
Binghamton, NY 13901

Blind Work Association, Inc.
55 Washington St.
Binghamton, NY 13901

Current Resident
56 Water St.
Binghamton, NY 13901

Current Resident
68 Water St.
Binghamton, NY 13901

Current Resident
76 Water St.
Binghamton, NY 13901

SMR Properties, L.L.C.
200 East 66th St. – Apt. E-203
New York, NY 10021

Current Resident
12 Riverside Dr.
Binghamton, NY 13905

Roberson Memorial, Inc.
30 Front St.
Binghamton, NY 13905

Current Resident
32 Front St.
Binghamton, NY 13905

Current Resident
22 Front St.
Binghamton, NY 13905

Current Resident
20 Front St.
Binghamton, NY 13905

Prescott D. Perkins &
Frank C. Petrulis
2134 E. Hamton Rd.
Binghamton, NY 13903

Current Resident
8 Front St.
Binghamton, NY 13905

Anton Lucas
or Current Resident
6 Front St.
Binghamton, NY 13905

Antonie G. Lucas
6 Front St.
Bingharnton, NY 13905

Current Resident
4 Front St.
Binghamton, NY 13905

James Ehrnke & Stacey Gould
or Current Resident
2 Front St.
Binghamton, NY 13905

St. Patrick's Roman
Catholic Church
9 Leroy Street
Binghamton, NY 13905

Current Resident
29 Front St.
Binghamton, NY 13905

Current Resident
31 Front St.
Binghamton, NY 13905

Current Resident
56 Oak St.
Binghamton, NY 13905

Melissa J. Doak
or Current Resident
44 Oak St.
Binghamton, NY 13905

Donald G. McBride
52 Coventry Ln
Binghamton, NY 13903

Current Resident
42 Oak St.
Binghamton, NY 13905

Michael & Bridget Talbut
Frederick J. Talbut
or Current Resident
40 Oak St.
Binghamton, NY 13905

John M. Brown
or Current Resident
38 Oak St.
Binghamton, NY 13905

John F. Kellogg
or Current Resident
36 Oak St.
Binghamton, NY 13905

The Lola Basos Revocable Trust
or Current Resident
34 Oak St.
Binghamton, NY 13905

Associated Catholic Charities
232 Main St.
Binghamton, NY 13905

Current Resident
32 Oak St.
Binghamton, NY 13905

John W. Young
or Current Resident
22 Riverside Dr.
Binghamton, NY 13905

Albert Nocciolino
P.O. Box 1921
Binghamton, NY 13902

Current Resident
18 Riverside Dr.
Binghamton, NY 13905

Robin Alpaugh
or Current Resident
16 Riverside Dr.
Binghamton, NY 13905

Dr. G. Clifford &
Florence B. Decker
8 Hawley St.
Binghamton, NY 13901

Current Resident
8 Riverside Dr.
Binghamton, NY 13905

Current Resident
6 Riverside Dr.
Binghamton, NY 13905

First Church of Christian Scientist
or Current Resident
17 Front St.
Binghamton, NY 13905

19 Front Street
Condominium Association
or Current Resident
19 Front St. – Apt. 4
Binghamton, NY 13905

Helena E. Meloro
or Current Resident
23 Front St.
Binghamton, NY 13905

Current Resident
421 Oak St.
Binghamton, NY 13905

John F. Judski
29 Lennox Ave.
Vestal, NY 13850

Current Resident
9 Front St.
Binghamton, NY 13905

Current Resident
7 Front St.
Binghamton, NY 13905

John H. McDonald
Amm K. Davison & Jame McDonald
2126 Hazard Hill Rd.
Binghamton, NY 13903

Current Resident
3 Front St.
Binghamton, NY 13905

Current Resident
3 Riverside Dr.
Binghamton, NY 13905

Five Riverside Drive
Towers Owners, Inc.
or Current Resident
5 Riverside Dr.
Binghamton, NY 13905

Four Oak Street Owners, Inc.
100 Court St.
P.O. Box 1625
Binghamton, NY 13902

Current Resident
4 Oak St.
Binghamton, NY 13905

Concord Temple
or Current Resident
9 Riverside Dr.
Binghamton, NY 13905

Helen J. Shulman
or Current Resident
14 Oak St.
Binghamton, NY 13905

William R. & Patricia A. Price
or Current Resident
12 Oak St.
Binghamton, NY 13905

David J. & Ellen K. Berti
or Current Resident
10 Oak St.
Binghamton, NY 13905

Maureen M. & Lucas L. Somerwil
or Current Resident
8 Oak St.
Binghamton, NY 13905

Michael F. Kovac, Etal
or Current Resident
6 Oak St.
Binghamton, NY 13905

Broome Mental Health Association
or Current Resident
82 Oak St.
Binghamton, NY 13905

Bal M. Nemani
or Current Resident
80 Oak St.
Binghamton, NY 13905

Pauline J. Browne &
Christopher J. Rosen
7398 Hampsted Sq.
New Albany, OH 43054

Current Resident
78 Oak St.
Binghamton, NY 13905

Henry Kachadourian, Etal
20 Westland Ct.
Binghamton, NY 13905

Current Resident
74 Oak St.
Binghamton, NY 13905

Valentina E. Kozlowski &
Kenneth L. Coleman, AS
2098 Hamton Rd.
Binghamton, NY 13903

Current Resident
72 Oak St.
Binghamton, NY 13905

Current Resident
68 Oak St.
Binghamton, NY 13905

Margaret McCarthy
or Current Resident
66 Oak St.
Binghamton, NY 13905

Nicoletta A. & Scott A. Fiske
or Current Resident
64 Oak St.
Binghamton, NY 13905

John H. Fuller
RD #2 Box 150
Johnson City, NY 13790

Current Resident
62 Oak St.
Binghamton, NY 13905

Michele D. Riach
or Current Resident
60 Oak St.
Binghamton, NY 13905

Christopher J. Ayres &
W. Emma
1434 Lodi St. – Apt. 1
Syracuse, NY 13208

Current Resident
22 Leroy St.
Binghamton, NY 13905

18 Leroy, L.L.C.
or Current Resident
18 Leroy St.
Binghamton, NY 13905

Jack A. Sperling &
Barbara A. Ruchames
or Current Resident
14 Leroy St.
Bingharnton, NY 13905

Current Resident
3 Florence Ave.
Binghamton, NY 13905

Paul Goughary
or Current Resident
7 Florence Ave.
Binghamton, NY 13905

David J. & Ellen Hancock-Berti
10 Oak St.
Binghamton, NY 13905

Current Resident
9 Florence Ave.
Binghamton, NY 13905

Thomas F. Catucci
or Current Resident
11 Florence Ave.
Binghamton, NY 13905

Matthew Welch
49 Park St.
Binghamton, NY 13905

Current Resident
13 Florence Ave.
Binghamton, NY 13905

Lewis & Patricia Schultz
RR 1 Box 117D
Sayre, PA 18840

Current Resident
11 Eaton Pl.
Binghamton, NY 13905

Phillip N. & Vanessa V. Cross
5258 Day Hollow Rd.
Endicott, NY 13760

Current Resident
13 Eaton Pl.
Binghamton, NY 13905

Richard & Margo Russell
1400 NY Rt 11
Kirkwood, NY 13795

Current Resident
15 Eaton Pl.
Binghamton, NY 13905

Kennedy Apartments, L.L.C.
P.O. Box 2599
Binghamton, NY 13902

Current Resident
7 Eaton Pl.
Binghamton, NY 13905

Current Resident
16 Florence Ave.
Binghamton, NY 13905

Current Resident
12 Florence Ave.
Binghamton, NY 13905

Beatrice Gorman
or Current Resident
10 Florence Ave.
Binghamton, NY 13905

Mary Q. Benedict
or Current Resident
8 Florence Ave
Binghamton, NY 13905

Pearl Chambliss
6 ½ Florence Ave.
Binghamton, NY 13905

Current Resident
61 Florence Ave.
Binghamton, NY 13905

Sharon L. Wilkins
or Current Resident
6 Florence Ave.
Binghamton, NY 13905

Louise Fabrizi
Anne L. Bartlow
4 ½ Florence Ave.
Binghamton, NY 13905

Current Resident
41 Florence Ave.
Binghamton, NY 13905

Faifal A. Afify
or Current Resident
4 Florence Ave.
Binghamton, NY 13905

Jerome K. Fallon
or Current Resident
2 Florence Ave.
Binghamton, NY 13905

Ralph D. Warren
345 Clearview Pl.
Binghamton, NY 13901

Current Rcsidcnt
12 Leroy St.
Binghamton, NY 13905

T Herbert, L.L.C.
or Current Resident
10 Leroy St.
Binghamton, NY 13905

Thomas H. Davis
240 Leroy St.
Binghamton, NY 13905

Current Resident
8 Leroy St.
Binghamton, NY 13905

Endicott Trust Company
One M&T Plaza - 10th Floor
Buffalo, NY 14203

Current Resident
6 Leroy St.
Binghamton, NY 13905

Current Resident
4 Leroy St.
Binghamton, NY 13905

Current Resident
49 Front St.
Binghamton, NY 13905

92 Riverside Drive, L.L.C.
or Current Resident
51 Front St.
Binghamton, NY 13905

SEPP, Inc.
or Current Resident
53 Front St.
Binghamton, NY 13905

Olurnuyiwa & Patricia Gay
or Current Resident
55 Front St.
Binghamton, NY 13905

Prescott D. Perkins
or Current Resident
57 Front St.
Binghamton, NY 13905

Stephgina Realty Co Inc.
33 Frederick St.
Binghamton, NY 13901

Current Resident
61 Front St.
Binghamton, NY 13905

Brian M. Prew
or Current Resident
63 Front St.
Binghamton, NY 13905

Anthony B. Casella
908 Lehigh Ave.
Vestal, NY 13850

Current Resident
64 Front St.
Binghamton, NY 13905

Stephanie, John & Helena Chomyszak
1 Morningside Dr.
Binghamton, NY 13905

Current Resident
62 Front St.
Binghamton, NY 13905

Cohanim Realty Corp.
or Current Resident
50 Front St.
Binghamton, NY 13905

Richard N. Aswad
or Current Resident
46 Front St.
Binghamton, NY 13905

Mack & Carol G. Travis
323 N Tioga St.
Ithaca, NY 14850

Current Resident
38 Front St.
Binghamton, NY 13905

Barry M. & Annette G. Shaw
or Current Resident
33 Front St.
Binghamton, NY 13905

Heidi Dekar Kaufmann &
Leslie Major Zinn
or Current Resident
35 Front St.
Binghamton, NY 13905

Danny J. Ross &
Robert W. Sweet
or Current Resident
37 Front St.
Binghamton, NY 13905

Barbara H. Skiadas &
Janice M. Vieira
or Current Resident
5 Leroy St.
Binghamton, NY 13905

Current Resident
9 Leroy St.
Binghamton, NY 13905

Current Resident
11 Leroy St.
Binghamton, NY 13905

Current Resident
13 Leroy St.
Binghamton, NY 13905

Janeth H. McCarthy
1309 Honoco Rd.
Aurora, NY 13026

Current Resident
1 Main St.
Binghamton, NY 13905

Current Resident
3 Main St.
Binghamton, NY 13905

Florence Street
Associates, L.L.C.
PO Box 265 WVS
Binghamton, NY 13905

Current Resident
5 Main St.
Binghamton, NY 13905

Bernardino R. Fiacco
or Current Resident
7 Main St.
Binghamton, NY 13905

Edward P. Hickey
or Current Resident
9 Main St.
Binghamton, NY 13905

HRD Enterprises, L.L.C &
E & B Kradjian, L.L.C.
84 Court St. - Ste 600
Binghamton, NY 13901

Current Resident
11 Main St.
Binghamton, NY 13905

H & F Realty
60 Crestmont Rd.
Binghamton, NY 13905

Current Resident
96 Front St.
Binghamton, NY 13905

Rittenburg Enterprises, LTD
P.O. Box 265 WVS
Binghamton, NY 13905

Current Resident
96 Front St.
Binghamton, NY 13905

Current Resident
92 Front St.
Binghamton, NY 13905

Robert L. McDevitt
or Current Resident
88-90 Front St.
Binghamton, NY 13905

Gregory E. Nichols
or Current Resident
86 Front St.
Binghamton, NY 13905

Pasquale N. & John Palombaro
or Current Resident
84 Front St.
Binghamton, NY 13905

Steven D. Tenney
P.O. Box 140 WVS
Binghamton, NY 13905

Current Resident
82 Front St.
Binghamton, NY 13905

The United Pentecostal
Church of Binghamton
or Current Resident
80 Front St.
Binghamton, NY 13905

Robert J. Connelly
666 Chenango St.
Binghamton, NY 13901

Current Resident
78 Front St.
Binghamton, NY 13905

John J. Burns, Jr.
4747 Vestal Pkwy E
Vestal, NY 13850

Current Resident
76 Front St.
Binghamton, NY 13905

Freelander Waterfront
Properties, L.L.C.
4747 Vestal Pkwy E
Vestal, NY 13850

Current Resident
74 Front St.
Binghamton, NY 13905

70 Front Street, L.L.C.
or Current Resident
70 Front St.
Binghamton, NY 13905

Current Resident
66 Front St.
Binghamton, NY 13905

IT Hospitality, Inc.
498 Foster Rd.
Vestal, NY 13850

Current Resident
65 Front St.
Binghamton, NY 13905

Binghamton City School District
98 Oak St.
Binghamton, NY 13905

Current Resident
79 Front St.
Binghamton, NY 13905

Current Resident
81 Front St.
Binghamton, NY 13905

Binghamton Club
or Current Resident
83 Front St.
Binghamton, NY 13905

Current Resident
87 Front St.
Binghamton, NY 13905

Current Resident
91 Front St.
Binghamton, NY 13905

Mark J. & Marina A. Huebner
P.O. Box 193 WVS
Binghamton, NY 13905

Current Resident
93 Front St.
Binghamton, NY 13905

Current Resident
13 Main St.
Binghamton, NY 13905

Terrence P. Cribbs
or Current Resident
21 Main St.
Binghamton, NY 13905

Paul M. & Teresa D. Price
79 Kendall Ave.
Binghaínton, NY 13903

Current Resident
25 Main St.
Binghamton, NY 13905

Linda Kerensky &
Deborah Wilson
or Current Resident
27 Main St.
Binghamton, NY 13905

Current Resident
35 Main St.
Binghamton, NY 13905

Current Resident
41 Main St.
Binghamton, NY 13905

Current Resident
43 Main St.
Binghamton, NY 13905

Current Resident
110 Oak St.
Binghamton, NY 13905

Current Resident
108 Oak St.
Binghamton, NY 13905

Current Resident
106 Oak St.
Binghamton, NY 13905

Current Resident
104 Oak St.
Binghamton, NY 13905

Current Resident
102 Oak St.
Binghamton, NY 13905

86 Oak Street, L.L.C.
2033 Cheshire Rd.
Binghamton, NY 13903

Susquchanna Resources &
Environment, Inc.
or Current Resident
84 Oak St.
Binghamton, NY 13905

William H. & Jane M. Connor
317 Manchester Rd.
Vestal, NY 13850

Current Resident
18 Eaton Pl.
Binghamton, NY 13905

Stephen R. Yanus
or Current Resident
16 Eaton Pl.
Binghamton, NY 13905

Kevin P. Whiting
17 Boland Rd.
Apalachin, NY 13730

Current Resident
17 Main St.
Binghamton, NY 13905

Daniel Swingle
or Current Resident
15 Main St.
Binghamton, NY 13905

Mayor Richard Bucci
City of Binghamton
38 Hawley Street
Binghamton, NY 13901

John Butler, Chief of Police
City of Binghamton
38 Hawley Street
Binghamton, NY 13901

Clifford Colgan
Fire Chief
City of Binghamton
38 Hawley Street
Binghamton, NY 13901

Alex Roberts
Zoning Board of Appeals – Chair
City of Binghamton
38 Hawley Street
Binghamton, NY 13901

Pat Ruso
City Council Representative
City of Binghamton
38 Hawley Street
Binghamton, NY 13901

Barbara Fiala
Broome County Executive
PO Box 1766
Binghamton, NY 13902-1766

David L Lindsey
Broome County Legislator
PO Box 1766
Binghamton, NY 13902-1766

Thomas W. Libous
NYS Senator
1607 State Office Building
44 Hawley Street
Binghamton, NY 13901

Donna A Lupardo
NYS Assembly
17th Floor
State Office Building
Binghamton, NY 13901

James Malcolm, PE
NYSDEC
625 Broadway, 11th Floor
Albany, NY 12233-7014

Tom Suozzo, PE
NYSDEC
1679 NY Route 11
Kirkwood, NY 13795

Mary Jane Peachey, PE
NYSDEC Region 7 Office
615 Erie Blvd West
Syracuse, NY 13204-2400

Alan Hertel
NYSEG
4425 Old Vestal Road
Vestal, NY 13850

Julia Guastella
NYSDOH
547 River Street
Troy, NY 12180

Gary Litwin
NYSDOH
547 River Street
Troy, NY 12180

Geoff Laccetti
NYSDOH
547 River Street
Troy, NY 12180

Ken Lynch
NYSDEC Region 7 Office
615 Erie Blvd. West
Syracuse, NY 13204-2400

Diane Carlton
NYSDEC Region 7 Office
615 Erie Blvd. West
Syracuse, NY 13204-2400

Joe Ryan
NYSDEC Region 9 Office
270 Michigan Avenue
Buffalo, NY 14203-2999

Clear Channels Radio
320 Jenson Road
Vestal, NY 13850

Citadel Radio
59 Court Street
Binghamton, NY 13901

WBGH/WIVT
203 Ingraham Hill Road
Binghamton, NY 13903

WBNG-WBXI
560 Columbia Drive
Johnson City, NY 13790

WICZ
4600 Vestal Parkway East
Vestal, NY 13850

WSKG
501 Gates Road
Vestal, NY 13850

Press & Sun-Bulletin
4421 Vestal Parkway East
Vestal, NY 13850

Louis J. Kelly, Commissioner
City of Binghamton DPW
38 Hawley Street
Binghamton, NY 13901

Richard Blythe
Broome County Clerk
44 Hawley Street – 3rd. Floor
PO Box 1766
Binghamton, NY 13902-1766

Stacy Merola, Director
Broome County Environmental
Manage Council
44 Hawley Street
Binghamton, NY 13902

ATTACHMENT F

The site is located in an urban commercial area within the City of Binghamton, NY. It is approximately 0.25 miles east and approximately 0.3 miles south of residential areas. It is located approximately 0.3 miles from the Binghamton YMCA, which has outdoor recreational facilities, and approximately 0.1 mile from the Broome County Veterans Memorial Arena, which is an indoor sports complex. There are no agricultural areas nearby the site.

ATTACHMENT G

The site is located at the confluence of the Susquehanna and Chenango Rivers in Binghamton, Broome County, NY. Regionally, fill and unconsolidated glacial deposits ranging in total thickness from several to 50 or more feet overlie a dense glacial till. Exact conditions at the site are unknown.

The site is covered with buildings and asphalt pavement, which serve to limit precipitation infiltration. Subsurface contaminant discharges have the potential to contaminate groundwater at and near the site. Groundwater is expected to flow south and west and discharge to the Susquehanna and Chenango Rivers. Because the site is adjacent to both rivers, any resultant groundwater contamination is expected to be limited in aerial extent.

No private or public groundwater wells are known to exist down gradient of the site (i.e. between the site and the rivers) or within one-half mile up gradient of the site.

ATTACHMENT H

No detailed information regarding the geology of the site exists that NYSEG is aware of. The following information, as presented in the Final Remedial Investigation Report, Court Street Site, Binghamton, NY, dated December 2002, is expected to be relevant as the Court Street site is approximately one mile from the Washington Avenue Site:

Regional Geologic Setting

The city of Binghamton is located in the Appalachian Plateau physiographic province, a region of similar geologic history covering the majority of central and western New York State. The rock and soil in the area are best understood in the context of the Plateau's history, discussed briefly below.

Prior to Pleistocene Glaciation

The interbedded shales, siltstone, and sandstone which form the bedrock of the region were deposited as sediments in an inland sea during the upper Devonian age (Rickard and Fisher, 1970). The long sequence of erosion that has left Central New York's' present landscape began approximately 340 million years ago when the inland sea drained and the region became dry land. The rock itself has remained nearly flat lying, cushioned from the compressive mountain building forces (which created the folds and faults in like-aged rocks south in the Pennsylvania), by a ductile salt layer in underlying Silurian aged rock.

The Pleistocene Glaciation

Several glacial advances have swept over Central New York. The last ice sheet retreated from its southern terminus in Pennsylvania approximately 17,000 years agoe. The present day Chenango and Susquehanna Rivers locally follow valleys carded by the glacier, valleys which probably predated the glaciation but was deepened and widened by glacial ice. The glacier carried unconsolidated material (clay, silt, sand, gravel, cobbles, and boulders) with it as it moved southward, and deposited this material on the land. Unsorted deposits, referred to as till, were deposited beneath the ice, or at the edge of melting ice, while deposits exhibiting a higher degree of sorting (i.e. stratified drift) were deposited by glacial melt water in rivers and lakes formed while the glacier slowly melted.

Post Glaciation

The present day Chenango and Susquehanna Rivers formed as the glacier receded from the area 10,000 to 15,000 years ago. The rivers flow largely on the glacial deposits which fill the valleys, gradually cutting into them and carrying the material downriver to be deposited again as alluvium. The soils deposited since the last glaciation are primarily this sand, silt, and clay left by the rivers and their tributary streams.

Binghamton was built on a broad lowland valley where the Chenango and Susquehanna Rivers join. The paths of the rivers, and the location of their junction have meandered across the valley floor leaving old stream channels, sand bars, and sediment filled oxbows superimposed on the glacial outwash.

Man's Influence

In two centuries of intensive habitation, the people of Binghamton have significantly modified the landscape. The rivers are now dammed and lined by floodwalls and dikes. Formerly swampy areas in the valley floor have been drained or raised with fill. A consideration of the near-surface geology must now include these man-made influences.